



Gazette

OCTOBER, 1945 30c



THIS MONTH'S COVER

THE action study of a marine artilleryman is the last in a series of GAZETTE covers by StfSgt John F. Clymer, who has returned to civilian life under the provision for release of Corps personnel over 38 years of age.

StfSgt Clymer's next tour of duty will be at his home studio in Westport, Conn., where he will pick up his art career at much the same place he left it to join the Corps. It was just 20 years ago that he left his home town of Ellensburg, Wash., for Vancouver, B. C., where he first studied art. He became an illustrator, and after 14 years of that switched to advertising art in New York City. His work, in both civilian and military life, has won wide recognition, and you'll be hearing more about him in the future.

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THE MARINE CORPS

THE PROFESSIONAL MAGAZINE
FOR UNITED STATES MARINES

Gazette

OCTOBER 1945

CONTENTS

JAPAN'S LAST FLING, <i>Lt J. Davis Scott, USNR</i>	3
MEMORABLE DAY	8
FIGHTING A NEW ENEMY, <i>Col E. E. Larson</i>	10
NEW INFORMATION PROGRAM, <i>Capt M. Ostrander</i>	14
MARINES HAD RADAR TOO, <i>LtCol H. B. Meek</i>	16
JURY RIGS FOR RADAR, <i>Capt Charles H. Beale, Jr.</i>	20
OFFICER EDUCATION, <i>LtCol T. A. Culhane</i>	23
BATTLE OF THE WANA DRAW, <i>Col A. T. Mason</i>	25
WORLD'S LARGEST AIRPLANE, <i>LtCol H. S. Mazet</i>	30
THE AERIAL PHOTO IN AMPHIBIOUS INTELLIGENCE, <i>LtCol Thomas J. Colley</i>	32
COUNTER-INTELLIGENCE, <i>Maj Thomas F. Mullaney, Jr.</i>	36
SOUTHWARD FROM SHURI, <i>MajGen Pedro A. del Valle</i>	39
JAP TACTICS ON OKINAWA, <i>LtCol Thomas E. Williams</i>	43
TRAINING POLICY FOR PEACETIME	47
ENGINEERS ON IWO, <i>1stLt Walker Y. Brooks</i>	48
WATER ON IWO, <i>StfSgt Jack Vincent</i>	52
JAPANESE LANDING CRAFT, <i>Col L. S. Swindler</i>	53
THE G-4 IS NOT A QM, <i>LtCol George F. Gober</i>	58

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This Month and Next

JAPAN committed military *hara kiri* in the final stages of the Pacific war, applying desperate Kamikaze tactics to modern weapons on a scale unparalleled in history. How she lost thousands of planes and pilots off Okinawa is told by *Lt J. Davis Scott, USNR*, in *Japan's Last Fling* (see page 3).

The Marine Corps is matching efforts of the Army and Navy to combat morale problems among overseas troops waiting for redeployment to the States in programs for education, recreation and welfare. *Col E. E. Larson*, chief of USMC Special Services, explains the multifaceted plan in his article, *Fighting a New Enemy* (see page 10).

Marines were first to use radar on land, both defensively and offensively, in the Pacific war, and were first to use it in the Pacific to direct a radar-equipped night fighter in shooting down an enemy plane. For these and other hitherto unpublished details of the use of radar in the Marine Corps, see *LtCol H. B. Meek's* article, *Marines Had Radar, Too* (page 16) and its companion piece, *Jury Rigs*

for Radar, by *Capt Charles H. Beale, Jr.* (page 20).

A comprehensive study of aerial photography and its place in modern combat intelligence doctrine is presented by *LtCol Thomas J. Colley* in *The Aerial Photo in Amphibious Intelligence*, with an inserted, four-page color map to illustrate the enemy situation on Betio as interpreted from aerial photographs (see page 32).

Much information about our naval strategy in the Pacific which has been a well-kept secret until now, particularly the part played by our submarine fleet, is revealed by *Capt. Miles R. Browning, USN*, in his article, *Japan Went Down With Her Ships*, for next month's GAZETTE.

Practical, relevant information which will help the marine officer comprehend what he is up against and how he can do his share in coping with the psychoneurosis problem in military life is presented by *LtComdr Philip Solomon, (MC) USNR*, Sixth Marine Division psychiatrist, in a series of three articles beginning in the November GAZETTE.



Japan's Last Fling

in the book at our forces in the closing stages of the Pacific war. For months the enemy's effort consisted almost entirely of deadly suicide tactics.

A desperate foe threw everything

By Lt J. Davis Scott, USNR

THE Japanese Kamikaze plane came racing down from the clouds, three fighters from our combat air patrol in hot pursuit with all guns blazing.

Everyone aboard our violently turning carrier was alert—all guns trained. The enemy plane virtually hopped across the stacks of a destroyer, moved through its intense AA fire, and came roaring for our port beam at better than 300 miles an hour.

The red balls which designate Japanese warplanes were hardly visible on the speeding blur. But you had time to see that it was a fighter type and that it had a heavy bomb slung beneath its fuselage.

Our five-inch batteries started firing first—then the 40 millimeters added their chatter to the din—as flight deck personnel, spare pilots and various onlookers scurried for safety behind bulkheads or flattened themselves on the deck, although everyone knew there would be no escape if the plane hit.

In the flash of an eye, if it wasn't stopped, the Kamikaze would be crashing into our flight deck.

One five-inch black puff enveloped the nose of the oncoming plane. There was a brilliant flash of fire. The plane blew apart in mid air. Small bits fluttered downward.

Our carrier turned away—untouched.

For nearly four months we, as part of the fleet that came to stay off Okinawa, had similar experiences with the Japanese special suicide attack corps. By some kindness of fate, but more probably because of the excellence of our gunnery and the watchfulness and skill of our combat air patrols, our carrier was never hit. All of our ships were not so fortunate.

The toll these fanatical aviators took in men and ships in less than four months was appalling. There were weeks when the loss threatened to become unbearable for even our large and powerful fleet. More than 30 fighting ships were sunk, and many more were damaged. The men lost either through death or wounds totaled in the thousands. No ship was safe.

We didn't know it then but this terrifying, devastating, all-out type of attack—which resulted in the greatest loss of men and ships for any comparable period in our Navy's history—was the Japs' last fling.

Our invasion of Okinawa evidently altered all plans of the Japanese high command. This island stronghold became their final stand. Like a desperate kid fighting a losing battle in a street foray, the Nips tossed at us everything they could lay

their hands upon. The easiest things to toss at us, seemingly, were human beings.

For months the enemy effort consisted almost entirely of suicide tactics. Not only were we called upon to face suicide pilots in planes heavily laden with destructive power, but there were others, as an anatomy of the enemy's despair, in specially built human rocket bombs, in suicide boats, midget submarines, antitank units, midnight airborne raiding battalions—and even swimmers with demolition bombs attached to their persons.

The enemy expenditures were costly. In one month, from 18 March to 18 April, the Japs lost an air force of 2569 planes. In four months the total went beyond 4000 planes and most of these were lost in Kamikaze raids. In addition, they lost thousands of airmen.

DESPERATE, devastating and destructive as were these tactics, it is a tribute to our Navy that never once, though sometimes it was a near gamble, did our scheduled program of conquest even falter. Through the smoke and flames of the Kamikazes our timetable continued without interruption—continued until the Japanese had nothing to do but surrender.

Our own personal experiences with the suicide pilots of Nippon were many and varied.

One afternoon several Kamikazes, flying as a unit, came sneaking through our patrols and AA defenses



A Kamikaze pilot ties a Jap ensign around his head before taking off on last flight.

to attack the carriers, battleships, cruisers and destroyers which composed our task group.

They appeared suddenly some 1500 feet above one of our newest and mightiest battleships—and for several minutes they circled lazily above us as they seemingly decided who would give his life first.

One plane broke out of the enemy formation and headed down in a screaming dive on the battleship. The dreadnaught's AA batteries were with it every inch of the way. The warship turned sharply—and the enemy plane went plunging into the sea at a high speed. It missed striking the ship by only a few feet and its splash wet the deck.

The others continued to circle. One of our AA shells connected and the enemy plane suddenly became a ball of fire. It fell seaward in a streamer of black, oily smoke. It landed with a terrific crash on the water, burned a moment and then disappeared.

Now another was diving at us. He was in a gentle glide—aiming for the flight deck. But he didn't get far. We connected again. The plane fell out of the sky in a swirling mass of flames.

However, not all of our ships escaped. Telltale columns of smoke began to rise from the horizon to mark the places where one or more suicide planes had carried out a successful attack. A curtain of AA fire, visible for miles, told us that the fleet was attempting to turn back still more Kamikazes who sought to "body crash" the stricken ship.

Like jackals, as one carrier skipper described them, the Japs would concentrate on a limping ship. Sometimes the number of attackers was fearsome. There is a report of one destroyer, on picket duty north of Okinawa, being subjected to a 50-plane attack, while another destroyer took five Kamikaze hits before it had to be sunk by our own forces. One destroyer shot more than 20 planes out of the sky in a several-hour attack. Others piled up tremendous totals in a period of a week. The accuracy of our anti-aircraft gunners became truly amazing.

THE Japanese attacks were bewildering in many instances. Sometimes they came at high noon, sometimes in the darkest night, and on other occasions at the first streaks of dawn. In some cases the attacking planes would come in low on the water, others used cloud cover and bad weather as a shield before diving on the fleet units, while others attempted to trail our returning strike planes in an effort to escape detection. There were reports of several planes coming in from one direction in full view to capture the attention of AA gunners—while another lone plane suddenly dove from the opposite beam. Sometimes they attacked in large groups—in others lone planes managed, by some strange means, to break through our defenses and strike before they could be detected.

One afternoon only the watchfulness of a marine gun crew captain prevented a suicide hit which

surely would have put our carrier out of action and killed hundreds of personnel.

This sergeant, scanning the skies for the enemy, suddenly spotted a Japanese plane diving for our stern. Our ship had had no advance warning. The sergeant quickly ordered the gun crew to open fire—and it connected. The plane crashed into our carrier's wake a few feet astern. The crash shook the ship from stem to stern, damaged our steering mechanism and parts of the enemy plane engine were flung onto our flight deck—but within a comparatively few minutes our ship was again in fighting trim.

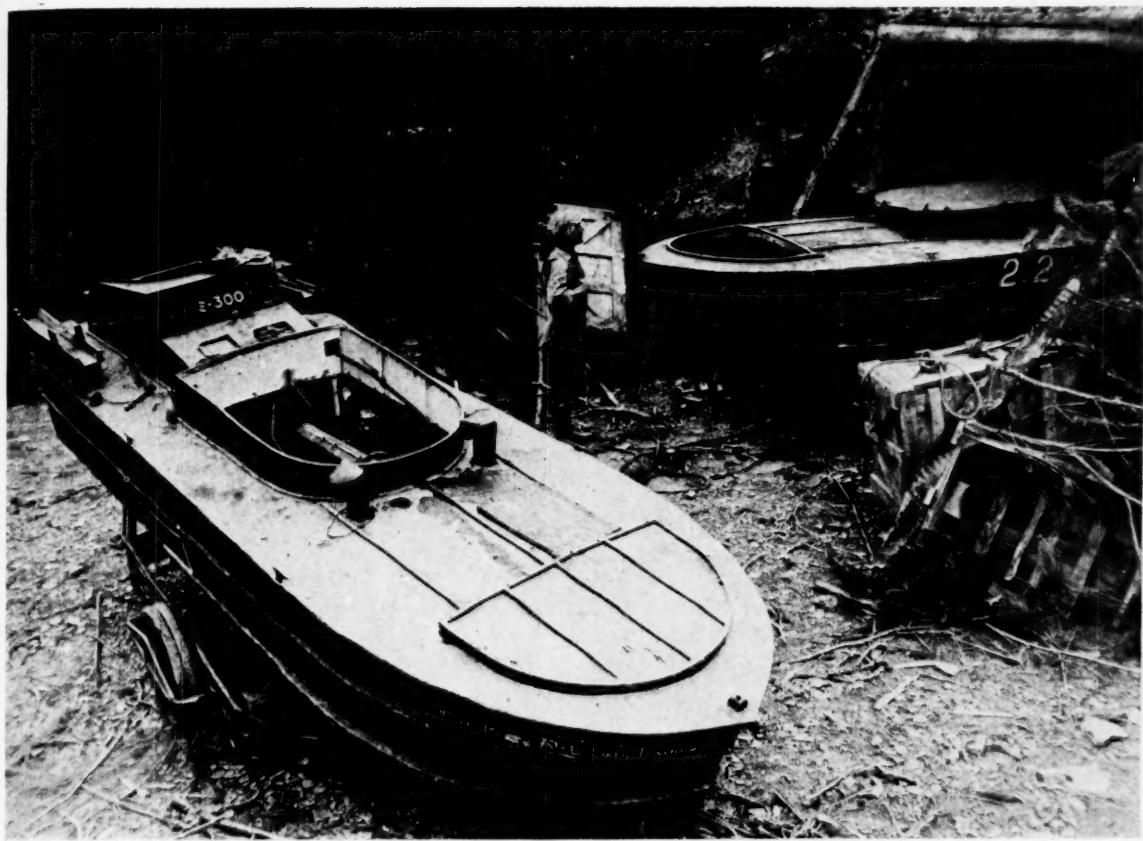
THERE was another time—an early dawn when some 40 of our fighters were warming up on our flight deck—when a previously undetected enemy plane plummeted out of the clouds dead ahead and started for our flight deck. Only a few guns could be brought to bear before it was winging only 200 feet over the deck—but for some reason it never dove. It continued onward and, after traveling the entire length of the flight deck, went back into the clouds as our five-inch guns tried vainly to knock it down. This may well have been a Kamikaze who lost his nerve.

Few adjectives are adequate to describe what happened to a ship when a Kamikaze found its mark. Even the most fearsome of words seem inappropriate to explain the horrors experienced on the carriers *Franklin*, *Bunker Hill*, *Intrepid*, *Saratoga*, *Lexington*, *Ticonderoga* and others when they were struck by suicide planes. Yet all came back to fight again—thanks to the almost superhuman efforts of courageous officers and men and to the manner in which free American labor built the ships.

Hardest hit of all ship units were the destroyers. More than a dozen destroyers have been officially announced as sunk while the list of those damaged by suicide attacks includes as many more. These stout little ships, guardians of the bigger fleet units, the transports and the amphibious craft, were almost constantly under attack at the high point of the Japanese airborne banzai. Naval strategy calls for the stationing of destroyers in varying numbers on a picket line at various compass points. These lines were usually 20 to 40 miles from our main fleet units. The Kamikazes could not avoid them and when the tin cans made their presence extremely troublesome to the suicide attackers the Japs began to concentrate on them. The list of damaged destroyers grew daily.

The destroyer is a highly maneuverable ship. Its AA defenses are necessarily limited by the ship's size and its lighter armor cannot take the beating a larger ship can withstand. There are reports of one Kamikaze hit doing considerable damage, while others indicate that it took as many as five hits to put the destroyer in a sinking condition.

A marine flier, who had been rescued near a Jap



Not only did we face Kamikaze planes but also suicide boats, human rocket bombs, midget submarines and even swimmers with demolition charges attached to them.

island after his plane was shot down by enemy AA, was aboard one of our newer destroyers when it received five suicide hits and a bomb hit. His story gives a good idea of what happened when a ship was hit. The first suicide plane hit the destroyer forward of amidships. It tore up the deck, kindled fires. Many men were wounded. The second hit near the same spot. The third enemy plane to dive missed its mark, but its belly tank flew through the air and landed amidships. Searing flames raced in all directions. Then another suicide plane hit directly amidships. The ship stopped dead in the water—the gun control system was also out of commission. A fifth attacker came up from astern and although he missed hitting directly his wing caught on the fantail and new fires sprang up. A Jap Val unleashed a 500-pound bomb and it fell opposite the No. 1 turret. The final Kamikaze dove his plane into the superstructure. The ship was finally sunk by our own gunfire. The enemy attacking force had included more than 50 planes.

The scenes he witnessed left the aviator with a horrible, nightmarish feeling. "The noise, the diving planes, the roar of our AA, the moans of the dying and the cries of the wounded and burned jarred your senses, upset your mind," he said.

Late in the Okinawa campaign there were large

gaps in the destroyer picket line. The Navy was forced to use specially equipped large landing craft to plug the holes.

But the destroyers fought on—even though at times the odds seemed almost insurmountable. The courage of those who manned these ships prompted one staff officer to declare "When the full story of Okinawa is written, much of the credit for the Navy's triumph must be bestowed on the officers and men of our destroyers."

PRACTICALLY every type ship in our fleet at one time or another suffered Kamikaze hits. No unit as large as a battleship or an Essex class carrier was sunk—but many were damaged. Suicide hits were scored on battleships, cruisers, carriers, destroyers, destroyer escorts, destroyer minesweepers, minesweepers, transports, ammunition ships, motor torpedo boats, cargo ships, LSTs, varied seagoing amphibious craft and one hospital ship. The hospital ship was hit by a Kamikaze one night in late April off Okinawa, despite the fact the ship was clearly marked and well lighted.

Though the Japanese were the first to adapt the suicide weapon to air war, there was nothing new in the use of suicides as a military instrument. The Japs, however, were the first to use it in such

great numbers and the first to use it as a major instrument of their military policy.

Our surface forces first encountered these weapons during the Leyte landings on 25 October of last year. As we moved to Iwo Jima and then to Okinawa the suicide campaign grew in intensity.

As soon as it became evident that the suicide crash was in reality an organized major campaign to destroy us, the Navy turned all attention to combatting these attacks. Every scrap of information was eagerly sought. Enemy documents, prisoners of war, examination of crashed planes and interrogation of our own personnel who witnessed the attacks brought forth considerable data.

THE Kamikaze was closely linked with Japanese mysticism. Kamikaze means "Divine Wind" and a divine wind, Jap legends tell us, was sent by the gods in the 13th Century to twice turn back the invading forces of Kublai Khan, grandson of the great Genghis Khan. The god-granted tempest and Japanese arms in August of the year 1280 resulted in the loss of 4000 ships and 130,000 of the Khan's men—a victory far more complete than Britain's triumph over the Spanish Armada.

This divine wind belief became a prominent part of the propaganda campaign which began in late July of 1944 to seek young men as Kamikaze volunteers. It was explained that the enlistment offered a glorious opportunity for Nipponese youths to crash into enemy ships and bombers. A niche in the Yasukuni Shrine was among the promised rewards.

Tokyo radio and the Domei news agency soon began to extol these youthful pilots, most of them between 19 and 24, whose deeds brought confidence of destruction of "the barbarian horde." Descriptive phrases such as "death defying, sure hit, sure death" were used. Propagandists boasted of "the ferocity and deadly accuracy of the assaults unleashed by the special attack corps." Newspapers and radio programs colorfully described in minute detail the suicide attacks.

The people of Nippon were told that the "glorious, terrifying, body-crashing blows" were designed to reduce the numerical superiority of the ships and machines possessed by the American forces. Jap leaders visioned a quick reduction of this superiority through the sacrifice of one pilot and plane for one of our ships.

Long, imposing lists of American ships "either sunk or damaged" were frequently printed during the Okinawa operations. In a period of about 20 days beginning 23 March of this year, the Japanese asserted "a total of 240 enemy warcraft vessels" had been put out of action. By 4 June propagandists said the total was "now approaching the 600 mark" and they labeled the suicide corps' deeds as "unparalleled in naval history."

When in late May Navy Secretary James Forrestal asked for more workers to man West Coast ship-

yards, the Nipponese bragged, "The enemy is hog tied and helpless in checkmating our terrifying, body-crashing blows."

Traditional Japanese ceremonies and trappings, especially those with a secret background, were utilized fully in the training of the Kamikazes. Some of the pilots were apparently volunteers, while others evidently had no choice as to their fate.

The training, which was under Army and Navy supervision, lasted several months. Emphasis was placed on spiritual intoxication, physical perfection, obedience to all orders and the leading of a life resembling that of a slave. No rest was allowed during the Kamikaze student's day—and even the most trivial of his habits were carefully regulated.

The student was required to frequently visit the shrine where the dead of Jap naval and army aviation were worshipped and made to swear before them "We are certainly coming after you." Veteran airmen exhorted the new students to "Be brave," "Make full use of your superior vitality," and "Obey your senior officers without fail."

By the time the unit was commanded to "collide" with the enemy fleet, the pilots were imbued with a strange spiritual frenzy. The last takeoff was marked by special ceremonies which included a farewell speech by the commander, the singing of a farewell song by the fliers' comrades and the drinking of special toasts.

On some occasions the pilots wore robe-like white suits, the white signifying death to the Japanese. Some carried the ashes of "unfortunate leaders who had fallen in aerial combat." And for some reason some pilots wore parachutes. The unwillingness of some pilots to participate in Kamikaze missions was shown in the discovery after a crash that one pilot was manacled to the controls.

Seemingly the Japs were instructed to avoid aerial combat. Usually they tried to run away when intercepted by U. S. air patrols. One Marine Corps fighter squadron, flying Corsairs from an *Essex* class carrier in Task Force 58, shot down a total of 29 Kamikazes in two engagements without suffering one nick of damage to its own planes. On another occasion, more than 50 "death defying" enemy planes were destroyed with comparative ease when they were detected approaching our fleet units.

ALL types of planes were used by the Japanese. Vals were perhaps used in the greatest number of attacks. Others included Zeke, Betty, Oscar, Ida, Frances, Tony, Jack, Judy, Nate, Dinah, Nick, Lily, Peggy, Frank and even trainer types, as well as several float planes.

In the initial suicide attacks a year ago mortar shells, artillery shells and varied types of ammunition were discovered in the remains of crashed planes. In the Okinawa attacks many Kamikazes carried varied size heavy bombs which in some cases were released just before the crash. Others carried the bomb right into the deck. Torpedoes

have also been part of the war load in some instances.

Most ingenious of the Nipponese suicide weapons was the piloted rocket bomb which made its appearance during the early part of the Okinawa campaign. This cigar-shaped 20-foot-long cylinder with stubby wings and tail section was the last word in suicides, for there was no escape when the pilot was embarked.

Carrier based pilots reported sighting several strange looking enemy aircraft about a week before nearly 12 rocket bombs were discovered by our troops on Okinawa. In most cases the pilots reported these small planes were attached to the underside of a medium bomber, usually a Betty. Our patrols shot down the Betty before the piloted bomb could be released, although on another occasion several ships reported being attacked by these strange craft which they promptly shot down.

The rocket bomb, which our technical air intelligence officers quickly nicknamed "Baka" (Japanese for idiot or fool), included a stubby, double tapered, low mid cantilever wing and a high set rectangular tail plane, at the ends of which were squared fins and rudders. Its wing span measured 16 feet. It had a 2400-pound warhead and was believed capable in dives of speeds up to 550 knots.

Three rocket tubes, projecting slightly aft of the open tail cone, provided the Baka's propulsion unit. These tubes were designed to give increased impetus to the dive on the target and its range, even under ideal conditions, was decidedly limited. The craft was streamlined and highly polished. The pilot's cockpit was just aft of the explosive charge. It contained a compass, inclinometer, air speed indicator (calibrated to 600 knots), altimeter, a pull handle for arming the fuses in the bomb, personal oxygen gear, and a microphone, probably used by the pilot to communicate with the mother plane. A small piece of armor plate, five-sixteenths of an inch

in thickness, was installed behind the pilot's head and beneath his feet. The pilot, seated beneath a bubble canopy, handled the plane by means of the conventional rudder pedals and control stick. The bomb was designed to be launched from the mother plane at about 4000 to 5000 feet, between four and seven miles from the target, at a speed of about 200 knots. The mother plane assisted the tiny plane in getting its bearings and the target's course—and it was believed that the pilot in the rocket bomb usually tried for "beam" shots because of the greater target area offered and the difficulty in maneuvering Baka at the high speed it attained.

An even larger model of the Baka was reported in construction, but this type was not observed in combat.

The suicide squadrons, the piloted rocket bombs and the various other terrifying suicide weapons unleashed by the desperate Japanese gave our Navy no little concern—but they never turned us back.

Japan's decision to use suicide planes as an airborne banzai was an all or nothing gamble. The decision put the Nipponese on a toboggan that relentlessly ran downhill to disaster. Little did the Jap propagandists realize that their 9 April broadcast, which attempted to analyze the American military situation, was in reality a prophetic statement of their own situation—soon to come true.

In this broadcast the Japanese said:

"The position of the enemy task force can be compared to a person riding a toboggan downhill who has lost control of it. The enemy has lost control of the situation from which he could not any more pull out. He thus is forced to go on in spite of terrible punishment. Just as the toboggan which is going down the mountain destroys its rider ultimately, so will the Americans be destroyed in their mad toboggan ride which they cannot halt."

The Japs' last fling was truly an amazing and historic toboggan ride.

Some Advice on Insurance

All naval personnel are being advised to study carefully their prospective financial futures before converting their service insurance policies upon discharge. The Navy Department suggests that enlisted and officer personnel delay converting to another type of policy until it is possible to see a "clear road ahead" financially. All five-year term insurance, effective prior to 1 January 1946, was extended by Congress this year for an additional three-year period. Present policies are therefore effective for eight years from issue, regardless of whether the policyholder is in or out of service and provided he continues to pay the premiums. The Veterans' Administration has received more than 17,000,000 applications from all sources for insurance purposes. For the present only certificates of insurance have been issued to purchasers. Regular policies will be issued to the new policyholders at a future date.

Memorable Day

The author of this flowery account of the Japanese attack on Pearl Harbor has not been identified, but he was obviously an enlisted man serving aboard one of the Japanese warships. The Pearl Harbor episode is only the first chapter of his projected book, which was to be entitled The Southern Cross.

THE Great East Asia War! Accursed conflict of nations!

The peoples of this world, seeking to enlarge their countries to gratify their boundless ambition, have rushed like a raging wave into a great war such as has never before been seen in the history of the world.

Epoch-making conflict of nations!

O tragic sight!

The weak become the victims of the strong. Those who have strength are victorious; those who have not strength are defeated. The victors use the natural resources and extensive territories taken from the enemy for the benefit of their own country; and, at the same time, expand their military preparations more and more in order to prevent the lies of enemy nations from ever again gaining a foothold. Like a great tree putting down roots deeply into the ground, they try to build a firm and enduring Paradise on earth.

The vanquished are driven from their country, and as an exiled race, gathered together into forlorn companies of the living dead, drift about aimlessly on a journey without end.

As long as there exist great numbers of people leading a crowded life on the limited surface of the earth, will not their innate passions of self-interest and ambition lead them to seek the means of living a more secure existence, and thus embroil them inevitably in war after war? A study of the past history of the world will immediately make this problem clear.

However, the wars of the past have been conflicts between two nations or at most a few nations only, in which only a part of the world has stood divided. I believe it is no exaggeration to say that they are mere trifling altercations in comparison to the Great East Asia War, which may be truly called a world revolution.

Now that we have been swept into this world conflagration, I shall attempt to set down in this book a record of my part in the Great East Asia War, and the impressions I have received from the many battles in which I have taken part. But first I must express my earnest hope that, by means of

The war which brought the Japanese utter defeat began with bright dreams of glory.

the supreme love for humanity which I take as my slogan, this horrible war may soon be ended in mutual understanding among nations, and that the peaceful days of before the war may return.

Ah! when one thinks of it, this is a century of endless change; he who in the morning is drunk with dreams of glory, may, by evening, know the bitterness of affliction. The world is on the brink of a great transformation.

While generally praising the holiness of love and mourning the tumult of the world, I must yet take up arms for the land of my ancestors and fight to the last drop of my blood. Therein lies the bitterness of life.

What a contradiction!

Below I shall attempt to set down, just as I recollect at random, a record of my part in the war.

Hawaii Operation (8 December)

AT the time of year when green leaves turn suddenly to red in the cool winds of approaching autumn, and one begins to feel the piercing breath of the North Wind—that is to say, on 18 November 1941—we left Kure harbor and sailed for the distant northern sea. The purpose of this operation was unknown to us.

We had taken on board war clothing, materials for protecting the guns against the cold, and a great quantity of sea nets, but we understood nothing of this.

Day after day and night after night the ships carried out target practice.

In the newspapers that we had on board it was said that we were to attack Dutch Harbor, but we did not believe it.

Why did we not believe it? Consider the moderate course of Japanese diplomacy up to that time. It seemed unlikely that Japan meant at this time to lift up her hand against Britain and America. Indeed, was there not at that moment a conference at Washington between America and Japan?

Our hopes were betrayed. We learned this when we went into port to refuel. Then we learnt for the first time how grave the situation was. Within the bay in that island of the bitterly cold North Pacific, the air fleet was gathered. The crews, who every day were busy at conferences and discussions, were in an excited state of mind.

Finally the navigation officer told us we were to make a surprise attack on Hawaii. At last Japan would be at war with Britain and the U.S.A.!

An air attack on Hawaii! A dream come true. What will the people at home think when they hear the news? Won't they be excited! I can see them clapping their hands and shouting with joy. These were our feelings. We would teach the arrogant Anglo-Saxon scoundrels a lesson!

We must be inflexible in our course. . . . We could not expect to return alive. . . . Thinking that, for all we knew, we might now be eating and drinking for the last time, we gorged ourselves on wine and cakes from the canteen.

FINALLY, early in the morning of 26 November, our magnificent fleet set out through the thick fog and stormy waves. Following a pre-arranged course, it continued on its way toward Pearl Harbor, expecting to destroy the enemy's Pacific Fleet.

The weather grows worse, a gale blows, the seas rage, a dense fog descends. In this bitter weather, a show of actual force, a test by the gods, though tossed about in their struggle with the elements, the ships continue on their glorious way.

In the several days of danger when flags were blown away and men washed overboard, throughout the storm, the target practice went on ceaselessly.

Every man was completely exhausted by continuous watches without sleep, and by the silent struggle with Nature; but our spirits were buoyed up by the thought that we were to strike the very first blow in this greatest of all wars.

Behind us there were a hundred million people, amongst them our own families, who had limitless faith in us. Imagine their joy on the morning when we should successfully carry out this operation!

Soon the fleet crossed the date-line. About this time we received a report that a steamship was proceeding on the same course as ourselves, from San Francisco to Russia.

It was most important now to keep a good watch. There could be no doubt of our success, provided that this operation was not discovered by the enemy. Thereafter the whole crew kept watch for sight or sound of this ship; but fortunately even when near to O point we had caught no sight of it. Considering the dense fog, we seemed to be under divine protection.

Finally, on the long-awaited X-Day, 8 December 1941, at 0130, we reached a point 300 miles to the north of Hawaii. Then the Imperial decree on the great battle was made public.

On this day there appeared in the clear sky a dense white cloud as if it were blessing our passage. Then from the decks of the aircraft carriers, plane after plane rose, flashing their silver wings in the sunlight, and soon there were a hundred and more aircraft in the sky.

Our Sea Eagles were now moving into a great formation. Our ten years and more of intensive training, during which we had endured many hardships in anticipation of this day—would they now bear fruit? At this thought a thousand emotions filled our hearts as, close to tears, we watched this magnificent sight. One and all, in our hearts, we sent our pleas to the gods, and putting our hands together, we prayed.

Meanwhile, our Sea Eagles, with the drone of

their engines resounding across the heavens like a triumphal song, turned their course toward Pearl Harbor on the island of Oahu and set forth on their splendid enterprise.

About 30 minutes later the fleet received the first report that the raid had been successful.

The second wave of the air attack force, in a large formation composed of some 200 planes, took off in the same way an hour later.

Reports come in one after another: "Enemy anti-aircraft fire is becoming more and more intense—we are now attacking against the main force of the enemy—we are bombing enemy airfields, the damage is enormous—"

In this moment we are repaid for all our pains-taking labors. The gods themselves will bear witness to the glory of our great enterprise!

The deck is now transformed into a whirlpool of excitement. As the glorious battle results are announced one after another by the pipes of the hurrying orderlies, shouts of joy are raised on all sides, and all gloom is completely swept away.

Meanwhile the fleet moves swiftly onward at a high speed of 26 knots.

About 0900 the welcome shapes of the returning raiders begin to appear through the clouds. One by one, like fledglings longing for their nest, they come to rest on the decks of the carriers.

Well done! But have they all come back? At this moment, my most earnest hope is that our losses may be small.

Within an hour, all the planes were brought aboard. We had lost only 29 planes. It was an incredibly small number when compared with our glorious battle results; nevertheless, when their heroic end was announced, the hearts of the crew were filled with sorrow for these men, and for the fate of our special submarines.

Suddenly the antiaircraft defense signal was sounded. An enemy plane, above the clouds, was insolently following in the trail of our aircraft. Intending to shoot it down with one blast from our ship, we manned our battle stations, but in a moment the enemy got away.

It was also reported that the enemy fleet was on our trail; but this was only a false alarm, and all the ships withdrew toward O point.

Thus, having inflicted upon America a loss which cannot be wiped out in a lifetime, we finally set out upon our homeward journey. On the way, the 2nd Air Flot and the 8th Car Div were detached and headed for Wake Island as an attack force.

On a morning near the end of the year—25 December—we entered the harbor at Kure, which we had long been yearning to see again.

On thinking back, it was a long journey. The heroic men who took part in it, the public excitement at home of which we learned by radio, and the wild waves of the stormy North Pacific are all etched upon my heart like a vivid dream.

Ah, memorable day—8 December 1941! END

Fighting a New Enemy

Special Services faces the task of defeating boredom and loneliness among the troops. Its strongest weapons are programs for education, recreation and dependents' welfare.

By Col E. E. Larson

WITH the successful conclusion of hostilities and the unconditional surrender of Germany and Japan, the related activities of Special Services in athletics, recreation, education and personal affairs have come into sharp focus in all theaters.

Now that the goal line has been crossed and the final whistle has sounded an end to actual fighting, all hands, both in and out of the service, are asking the question, "When will GI Joe and Seaman Joe Gish return to civilian life?"

A drastic reduction in personnel of all services is inevitable and is in fact now being effected as expeditiously as the situation permits. This pace will be accelerated and maintained at a high level during coming months until all services have been reduced and stabilized at a figure determined to be the proper one to insure inadequate strength in all forces to carry out assigned missions and to meet any possible contingency.

Whatever the final figure may be, it undoubtedly will be much larger than anything envisaged prior to 7 December 1941, when this country was catapulted into total war. Further, it will take a considerable period of time to make necessary adjustments and to actually accomplish the physical task of demobilization. It would appear safe to assume that a high rate of separation from the service will continue for about a year.

In order to be assured that the off-duty, leisure time of service personnel in the vast reaches of the Pacific is adequately taken care of, a combined Army, Navy and Marine Corps group representing Special Services of these arms recently made a survey of the implementation of the Army Special Services Program set up in the ETO for VE Day. As a result of this inspection, it is felt that plans and procedures for accomplishing the assigned mission of Special Services in the Pacific will be served and can be more effectively prosecuted.

Military men throughout recorded history have indicated that one of the most important weapons of war, one without which final victory can never be won, is *morale*. Recognizing this fundamental truth, the services, the Army, Navy, Marine Corps and Coast Guard, have during World War II done a great deal to integrate and coordinate the activities charged with servicing the off-duty leisure time of personnel.

Important as these activities are in time of war, they are supplemental to the training role. Now, however, with the war won, that urge to prepare

for the coming battle, that stimulant of search for and closing with the enemy has disappeared. In its place is the very natural desire on the part of hundreds of thousands of wanting to get back to a normal peaceful life.

It is obvious that more emphasis in all services must now shift from purely military training to non-military activities. The enemy will now be boredom and loneliness. These dread opponents of well-being must be overcome by active, intelligent leadership, directing and leading the energy of all hands into constructive fields of education, recreation and athletics.

Adequate number of trained officers and enlisted men must be made available on a full-time basis in order that well-planned programs which will appeal and which will ensure maximum participation can be ensured.

As a part of the program and in order to assist in the orderly procedures of demobilization, all commands must have available trained personnel to handle the personal affairs problems. Always inherent in any group, problems of a personal nature will now assume proportions that can only be served by assignment of officers and men who have been trained in this field. Now and during the coming year it is imperative that officers and men alike have available personal affairs personnel to counsel and advise them on matters covering a tremendous scope.

Now, as never before, the combined services have an opportunity to do a constructive job, for the country, for the officers and men concerned and for the individual service. During the coming year, with hundreds of thousands returning to civil life, the military can render a very real, productive service in giving wholesome constructive organized play and educational opportunities that will pay big dividends. Failure to grasp this opportunity can only result in disappointment on the part of those being separated, with a consequent and attendant feeling that the services do not appreciate the contribution and work done by the rank and file. This is a very real danger and one which needs to be avoided at all costs.

Making available full days of activity in programs calculated to be interesting as well as constructive is the obvious alternative. It is a must and, as the Secretary of the Navy says in a recent letter to all major commands, "I desire to reiterate what CINCPac and other commands have said about the great importance of a well-organized rec-

reation program for all naval personnel during the demobilization period as a very positive factor in maintaining a high state of morale. I consider that the proper organization and conduct of this program is one of the most important responsibilities of all officers in command positions. The factors essential to the success of the program are: (1) enthusiastic interest and support of the major commanders; (2) the assignment of properly qualified personnel in adequate numbers to insure the careful planning, organization and execution of the programs."

Mr. Forrestal further states, "Attention of all responsible commanders is invited to the necessity for coordination in order to bring together the recreational and educational programs into a single balanced program. Insofar as possible, all personnel will be given an opportunity to participate in either the recreational or educational program. Nothing in the foregoing should be construed as prohibiting an individual from participating in both programs if this can be arranged. It is also considered important that these programs or separate recreational and educational programs should be provided for junior officers."

To this end the Army, Navy and Marine Corps are working together in order to bring to our personnel in the far-flung garrisons, bases, staging areas and occupational zones in the Pacific a maximum of service calculated to sustain a high degree of constructive activity and entertainment.

Recreation, athletic and educational programs, as organized for service personnel in the Pacific, envisage operating under a variety of conditions both afloat and on shore. Service men are located from the tropics to the arctic, from lonely isolated outposts to crowded transports where space is at a premium. Energetic, understanding leadership can and will solve the local problem.

The Special Services Branch in the Marine Corps was activated on 1 February 1945. As reorganized on that date, the branch has cognizance of three principal activities. They are:

- (1) Rehabilitation (civil readjustment).
- (2) Post exchanges.
- (3) Welfare, including—
 - (a) Athletics.
 - (b) Recreation.
 - (c) Education.
 - (d) Dependents' welfare.
 - (e) Supply.

The primary responsibility of Special Services personnel outside of Headquarters, Marine Corps, is concerned with (3) above—welfare.

Vigorous, intelligent action to accomplish the mission assigned to Special Services—"to bring to the individual marine and to his dependents, where appropriate, all non-military services affecting his general welfare which the Marine Corps can provide"—will materially assist in the maintenance of

the high quality of professional attainment which has characterized the Corps since 1775.

Positive leadership in organizing off-duty activities which can be made available to all personnel is the responsibility of the Special Services officers and enlisted men assigned to such duty. These activities are of such a diverse nature that there is no individual in the Corps who cannot be benefited and who should not contribute, either by active participation or by attendance.

No directive can of itself make morale; nor can any enterprise succeed without someone leading the way. Each post, station, detachment or unit in the field poses a different problem. In every situation, however, the fundamental human equation is present. Solution of the problem in a manner calculated to bring the maximum amount of good to the greatest number is the goal to be attained. It is natural for men to respond to constructive suggestions and to intelligently planned programs embracing athletics, education and recreation.

The temper of an organization, its efficiency, its fighting ability, is measured by that intangible quality called *esprit de corps*. This quality is engendered, grows and flourishes in any unit in direct proportion to leadership displayed. An outfit that has a planned program which includes all personnel soon reacts as a united team. The stronger the team spirit, the more proficient the unit.

Education

One of the most important activities of the Special Services Branch is the Education Section. The mission of this section is to afford Marine Corps personnel an opportunity to initiate or to continue their educational and vocational pursuits while in service, and to provide accreditation procedures whereby credit or recognition for in-service training and educational attainments may be gained.

In addition, the Education Section is charged with the responsibility of informing Marine Corps personnel of the trend of events and current affairs, both national and international. This program (formerly called "War Orientation") is known as "Information," and parallels the Army "Information" and the Navy "War Orientation" programs. (See page 14.)

The Education Section is also charged with the procurement and distribution of education and information texts, material, and literature necessary to carry out these programs. The education program is divided into—

(1) *Educational and vocational guidance.* This is the process of investigating the background of an individual by reference to his service record book and qualification card to determine his educational needs and, during an interview, recommending what course of action he should take to attain his particular end.

(2) *Correspondence courses.* This phase of the

education program is conducted by the Marine Corps Institute; Correspondence School, Marine Corps Schools, Quantico, Va.; and the U. S. Armed Forces Institute, Madison 3, Wis. This combination of correspondence agencies offers an almost unlimited variety of academic, technical and college-level courses.

(3) *Voluntary off-duty classes* augment the correspondence phase of the education program and provide a voluntary, off-duty on-the-spot educational program for personnel who desire that particular type of study. Organization of these classes is undertaken by Special Services personnel assigned or designated.

(4) *Self-teaching courses* are provided for personnel who, because of military necessity, hospitalization or personal preference, are unable to participate in correspondence or off-duty class programs.

(5) *Testing.* The U. S. Armed Forces Institute provides, upon application, testing services as follows:

(a) *End-of-course tests.* Upon completion of a USAFI correspondence, off-duty or self-teaching course.

(b) *Accreditation examinations.* To measure competence in terms of civilian school standards, two types of tests are offered: subject examinations (to measure knowledge in a particular subject), and general educational development examinations (to measure educational levels which might have been advanced since the marine left school, while he is in the service, or to examine the merits of any legitimate claim that his school record does not accurately reflect educational status).

(6) *Accreditation* is the procedure by which application is made to a school or college for evaluation of in-service training or experience in terms of academic credit. This procedure is also applied to inform former or prospective employers of in-service educational achievements or vocational experiences.

Personal Affairs

It is the mission of the Personal Affairs Section, Welfare Division, Special Services Branch, and of the Special Services officers in the field, to advise, inform and assist, upon request, Marine Corps personnel, their dependents and the dependents of deceased marines on matters relative to the welfare of dependents and personal problems that may arise.

Specially trained officers will provide accurate and current information on a marine's acquired rights and benefits, will give assistance in solving personal problems, and will represent to the man the interest which the Marine Corps and the Government have in his welfare and that of his dependents.

Present allowances provide for the assignment of a competent personal affairs officer at each divi-

sion headquarters and at certain larger posts and stations; and for the assignment at each regimental and separate battalion headquarters of an officer with the dual job of personal affairs and education. In infantry battalions, a Special Services officer will handle all five phases: personal affairs, recreation, athletics, education and supply.

The primary functions of an organization personal affairs officer are—

(1) To establish and maintain liaison with chaplains, the Navy Relief Society, Red Cross field directors, organization commanders and the like.

(2) To counsel men on problems of dependents' welfare and personal affairs such as insurance, allotments, family allowances, rights and benefits.

(3) To continuously furnish accurate, current information to units on these and kindred subjects.

(4) To implement in the field the functions of the Personal Affairs Section at Headquarters.

Recreation

Recreation is any leisure-time activity which makes a contribution to the well-being of an individual. It is a broad term, embracing a great variety of free-time pursuits. However, for administrative purposes, the Recreation Section of the Special Services Branch has been specifically charged with the handling of the following, and other, activities:

Motion pictures	Recordings
Radio	Hobbies
Libraries	Music
Periodicals	Games
Camp shows	Handicrafts

The Special Services officer's job is planning a specific program and in translating those plans into action.

Personnel selected to handle recreation should do it as a full-time job. They should not be saddled with so many collateral duties that the primary mission cannot be accomplished.

The local situation will naturally dictate just what can be accomplished. It is up to the individual Special Services officer to use his energy, resourcefulness and enthusiasm in setting up a balanced program which will bring the benefits of recreation to every member of the unit.

The duties of recreation leaders are rarely the same in any two units. Garrison troops, for example, may like tournaments, tours and camp shows, while defense battalions and hospitals may want and need handicrafts, reading and small board games. Some units are hard to organize, while others will be eager for help.

Facilities and equipment are necessary for many types of programs. It is the responsibility of the Special Services officer to secure, as far as available means permit, actual materials which will guarantee the personnel of every unit an opportunity to

participate in as many of the above-listed activities as possible.

The mission of recreation workers, officers and enlisted, will be accomplished when every man in the outfit has the opportunity and encouragement which causes him actually to engage in a variety of activities which he needs and wants.

High morale, group loyalty, fighting spirit, attention to duty and self-sacrifice are byproducts of recreation. These are the intangibles that make an outfit great. But these attributes cannot be ordered or bought. They must be cultivated. This is the task of recreation.

Athletics

The Special Services officer must have a thorough knowledge of all sports and the ability to prepare and supervise integrated athletic schedules calculated to meet any situation. It is not necessary that he be proficient or expert in each sport or game. However, it is incumbent upon him to select, from among personnel available, persons who are skilled and who can, in turn, take over the actual coaching, detailed organization and equipment functions of each sport.

A wide range of athletic games and sports should be available in all units. Some of these are baseball, softball, soccer, basketball, swimming, track and field events, football, horseshoes, fishing, volleyball, pingpong, boxing, speedball, mass games, wrestling, handball, tennis and water polo. In order that a maximum number of officers and men may be encouraged to participate in these or other sports, Special Services personnel require active participation on the part of young officers and leading noncommissioned officers. Platoon leaders, because of their close association with their men, will naturally be expected to take a particularly active part in these athletic programs. Here is where esprit is born; and platoon leaders and company officers are expected to extend themselves in leading and inspiring their men by taking a leading part in these games and in lending encouragement.

Approved Tables of Organization provide for full-time Special Services officers in all echelons of command down to and including battalion level. Company and platoon officers and men assigned to these responsibilities are on a collateral duty basis.

Those so designated must "double in brass" and in order to gain the maximum benefit these individuals must give of their time unstintingly.

There are few American men who are not keenly interested in some form of sport. This is particularly true of marines. The inherent desire and urge are present; all that is required is for someone to set off the spark. This is the task of the Special Services officer and those assisting him.

In practically every unit where marines serve, on land or sea, there is or can be made available some form of athletic endeavor either on a team or individual basis.

If the athletic gear is not at hand, contact can be made with the Special Services officer of the unit, or requests for assistance can be instigated to the next higher echelon of command, or to an adjacent unit. As gear and equipment are issued it is necessary that proper care be exercised to see that it is not abused or neglected. Every possible means must be used to keep it in a good state of repair.

Physical fitness is a marine "must." Athletics provide the means for maintaining that condition when the men are not engaged in an operation or actually on duty. The ideal situation will be reached when every officer and man takes an active part in some sport.

Supply

There can be no extensive, well-rounded Special Services program unless adequate means are provided. The responsibility of procuring materials and equipment in order that an integrated program in athletics, education, and recreation can be carried on falls on the Special Services officer.

There are five main sources of funds from which necessary items are purchased. They are:

- The Quartermaster, U. S. Marine Corps.
- Welfare and recreation funds (W&R), Navy.
- Unit recreation funds.
- Headquarters recreation fund.
- FMF recreation fund.

Naval supply depots are now stocking materials to provide for marine needs. Organizations are authorized to purchase from naval supply depots by submitting their requisitions, accompanied by check, through Fleet Marine Force, Pacific; or Headquarters, Special Services, as appropriate.

The Shooting's Not Over

Hardly had the happy message of Japan's surrender faded from the air at a Second Division area in the Pacific than six gleeful Navy hospital corpsmen bared the arms of nearly 1,800 victory-dazed marines and proceeded to bring them back to earth by shooting the entire lot with cholera and typhus serum. What's more, the corpsmen shot the entire 1,800 twice before sundown.

New Information Program

The more we

know about others the better for us, individually and as a nation. To orient marines in a peaceful world, tools are now at hand to be put in action. By Capt M. Ostrander

IN his letter to all Commanding Officers of 29 June 1945, inaugurating the Education and Information Programs, the Commandant of the Marine Corps stated that Headquarters has undertaken not only the responsibility of providing individual marines with the opportunities for securing further education, but "also of informing them of the trend of world events and current affairs."

Importance of a program through which we are enabled to keep up with current events in the world about us is perhaps best illustrated in the words of BrigGen H. C. Campbell, USMC, when addressing the recent opening session of a series of meetings on world affairs planned for the Cherry Point Air Station in North Carolina. He told the audience that the war came about "by lack of individual knowledge on the part of the citizens of all nations as to the best methods and means of maintaining peace." The truth of this statement is quite apparent. Most of us who recall the events which occurred prior to the outbreak of war will remember the lack of interest that prevailed concerning them. Japan's invasion of Manchuria, the seizure of Ethiopia, Fascist intervention in Spain, and the Munich meeting were all events which played a part in bringing about the war, and yet we paid little heed.

During the war, however, with our lives and fates at stake, most of us began to realize that what happens outside of our own little backyard is of importance to each of us. Not only because events all over the world have a direct effect upon us, but also because as citizens of a democratic country we can have an effect upon them and the course of our government. We have an opportunity to vote, for example, while in the service. Ours is a democratic government, but it is no stronger than the people who are in it. We are those people, and to keep a people's government heading in a progressive direction in a progressive world it is up to us to know the score. Whether we think it is a good idea or not, it is a fact that how we think and speak and vote will be major determining factors in the future of the country and of the world. Our actions as citizens, and as veterans, will determine whether the journey from Parris Island and San Diego to Guadalcanal and on to Okinawa and Tokyo has won the victory we're seeking—not only maintenance of peace but other principles for which we're fighting as well. Lack of knowledge can make our sacrifices meaningless.

An Information Program cannot, of course, tell us how to think and act. Propaganda has no place in it. It can, however, and does, aim to give us

factual information and balanced arguments concerning current events to enable us to form our own opinions based upon a maximum amount of knowledge.

In addition to the benefits to be derived in the future from having a well-informed citizenry, other considerations for future military training are present. It is a commonplace that troops who know the why and wherefore of their actions will fight better. There has been ample demonstration of this principle in this war in the tenacious way guerrilla forces of conquered countries have fought. A survey of men's attitudes in one of the branches of the American armed forces showed that the top fourth of the men in point of information also held the most favorable attitudes toward our cause, and those having the least information also had the least desirable outlook. Later it was demonstrated that after men had learned a number of facts concerning the subject, an improvement in attitude occurred. Just as men need orientation concerning their position in battle, so do they need orientation about the war and world. This does not mean that one must be an intellectual bookworm in order to fight well, but it does indicate that the man who acts with his eyes open is more likely to do better. The importance of individual jobs in the Corps—sometimes seemingly useless and uninteresting—can better be grasped when one knows about the changing battle lines and over-all progress that is being made to which he is contributing. Knowing where we fit into the whole gives all of us added incentive.

RECOGNITION of the need of keeping fighting men informed of what is going on is not new, but on the contrary is in the tradition of the great military leaders of our history. When General George Washington was asked what should be emphasized most in the training of the troops of the Continental Army he replied, "Impress upon the mind of every man, from the first to the lowest, the importance of the cause, and what it is they are contending for." General Washington's concern over the lack of sufficient knowledge of events of the time had, incidentally, ample justification. While Benjamin Franklin was busily securing French aid for the American Revolutionary cause and attempting to conclude a military alliance, Lord North, King George III's Prime Minister, sent emissaries to the States to negotiate a peace. They brought with them mere concessions which did not include the granting of independence, for the British had quickly seen the importance in the course of the struggle of 1776 of French participation.

pation, and attempted to prevent it by playing upon the factors that divided American opinion of the time. They knew, for instance, that independence was not by any means the war aim of all the colonists, and believed that by offering to refrain from imposing a duty on tea and revenue taxes, it would be possible to create dissension among the colonists. They were greatly assisted in this endeavor by the American Tories who, by appealing to religious prejudices, urged the Colonial troops to stop fighting and desert the Revolutionary cause.

Other differences and jealousies occurred among the Colonial troops, including regional units. On 4 July 1775, General Washington had to remind the troops that they were "troops of the United Provinces of North America, and it is hoped that all distinctions of colonies will be laid aside." A year later he called upon all officers to initiate programs to overcome "the unhappy pernicious distinctions and jealousies between the troops of different governments." General Washington saw that the traitors and demagogues of the time were able to utilize the troops' ignorance of Benjamin Franklin's work and its significance, and that a knowledge of current events was essential. He appealed to Congress for funds for a portable printing press to enable him to put out news of the progress of the war.

Again, in the War of 1812, General Jackson saw the need for informing troops of the purpose of the war. His Division Order of 7 March 1812 said "—but another and nobler feeling should impel us to action. Who are we? And for what are we going to fight?"

Certain of the problems faced by General Washington and General Jackson may be seen in a different form and degree today. Herr Goebbels saw them, although to an exaggerated extent, when he said: "Nothing will be easier than to produce a bloody revolution in America. No other country has so many social and racial tensions. We shall be able to play upon many strings there."

With its expansion from a peacetime size of approximately 17,000 troops to nearly half a million, the Marine Corps has absorbed a cross-section of the country—men and women who come from the East, from the North, from the South and West, and whose ancestors came to America from all over the world. Our religions are practically every creed known in the civilized world. We vote Democratic, Prohibitionist, Republican, or for any other party. It is in these kinds of differences that Herr Goebbels thought he saw a chance for developing insurmountable antagonisms among us. And indeed these differences have been exploited at times in attempts to weaken our war effort. Yet it is in these differences that our strength lies as well, for they are the foundations of our tradition and common heritage of freedom of thought and channels for expression. Most of us are from communities composed predominantly of one or another of these

groups, and are meeting and living with other Americans who think differently from us for the first time. Increased understanding and a lessening of the chances of prejudices about each other are important products of this mingling. When we participate in group discussions—an integral part of an Information Program—our understanding and tolerance of one another's point of view will be greatly increased.

IT is for such reasons as these that the Information Program has been launched.

What are some of the things we should be informed about? And how will the Information Program tell us about them?

Here are some. Their relative importance is up to your own interpretation, of course, but one of the most important is knowledge about our allies. Insistence by the citizens of our country upon a foreign policy toward them that is based upon ignorance, or influenced by enemy propaganda, can be disastrous. The more we know—not just feel—about them, the better able we'll be to tell what our relations with them should be. Another matter about which most of us feel a personal concern is the opportunity for jobs in peacetime, and yet if, through lack of facts, we're influenced into following the demagogic appeals of some one selling us a fake panacea for the country's economic problems, twenty GI Bills of Rights won't help us.

What the United Nations Governments are doing to consolidate our military gains—the San Francisco Charter, Bretton Woods, the Food and Agriculture Organization—are steps intended to build a better and safer world. Will they accomplish that purpose? It is up to us to know, for our support or opposition will make or break them in the future.

How can we be kept posted on what's going on? Units overseas are frequently isolated from daily newspapers, and radio news frequently has been confined to unrevealing communiques. Under these circumstances, a man serving in the Pacific area gets far behind in current events. The answer lies in the development of local programs by the individual units, consisting of the posting of maps and news sheets, holding of lectures and discussion groups, the showing of films and similar activity. From the Special Services Branch in Headquarters such materials as weekly fact sheets, informative pamphlets, books and maps are being sent to Special Services Officers to assist in developing such local information programs, as well as information concerning locally developed techniques for successful information programs.

Mailing of literature and visual aids will be of little value, however, unless thriving local programs are in operation. Strong backing by commanding officers is essential. The tools for information programs and advice on their use are available but need to be put into action. END

Marines Had Radar Too

Before the outbreak of war the Marine Corps was training radar operators. These men and their successors gave the Corps many "firsts" in the use of this new device.

By LtCol H. B. Meek

RADAR has been very much a part of the Marine Corps throughout World War II. Marines were the first of the U. S. forces to use it in land warfare. At Bataan, fire control radars were maintained and manned by marines to direct the fire of three-inch anti-aircraft guns. Three planes were claimed as destroyed by means of this radar fire control. When the Japs captured Bataan, the marines destroyed the radars and took to the hills where they were ultimately killed or captured.

The Marine Corps opened its first radar school on 29 July 1941 at the Signal Battalion, Marine Barracks, Quantico, Va. Initially, only radar operators were trained. Technicians were trained in radar courses at the Eastern Signal Corps Schools, Fort Monmouth, N. J.

In November of 1941, the Signal Battalion at Quantico convened the first radar technicians' class to be operated by the Marine Corps. The radar courses of this signal battalion turned out operators and technicians until 10 October 1942, when the radar school was moved to Camp Lejeune, where it is now operating.

In the meantime, the war was going on and radar equipment and personnel were in great demand.

Marines manned radars in the defense of Midway. On islands surrounding the Hawaiian Group and in Samoa, marines installed radar equipment to aid in the defense and air raid warning systems of these outposts.

On 7 August 1942, the First Marine Division, reinforced, landed on Tulagi and Guadalcanal in the first offensive of the war by United States' forces. Not only was this the first offensive of the war, but it was the first use made of radar in a land offensive. The 3rd Defense Battalion accompanied the First Division and took both fire control and long-range search radars ashore with them. Two long-range search radars were installed in the vicinity of Henderson Field and the fire control radars were distributed among the 90mm gun batteries of this battalion. On 8 September 1942, Detachment A of the 5th Defense Battalion arrived and went into position on Tulagi with another long-range search radar and some fire control equipment.

The search radars performed excellently and the early warning information they provided on both surface and airborne raids soon gained for these radars the confidence of all military personnel engaged in the operation. Not only did they provide



Radar-controlled searchlights and batteries of the 9th Defense Battalion go into action during a night attack on Rendova Harbor. Gunfire is reflected in the water.

the early warning that saved the lives of men who otherwise might have been caught above ground when raids came, but they provided a means of directing friendly fighter planes to intercept the incoming raiders. Thus was the first fighter direction of land-based planes attempted by use of radar. From the experiences of these first hectic months was conceived and developed the smooth-working technique that characterized the fighter direction methods of the closing months of the war.

Radar equipment on Guadalcanal did not escape without losses during those early days. Japanese naval gunfire damaged one of the long-range search radars at Henderson Field so badly that its use had to be abandoned. Fire control radars likewise suffered from bomb fragments and were inoperative much of the time.

The fire control radars did not meet with the success the long-range search radars enjoyed due to bomb damage, lack of spare parts, inadequate number of trained personnel and no remote control system for controlling the 90mm guns by radar. Anti-aircraft fire was all manually operated and visually directed through most of the campaign.

IT WAS not until the 9th Defense Battalion landed on Guadalcanal and went into position in the Koli Point area that fire control radar equipment had an opportunity to demonstrate its effectiveness. On the night of 28 December 1942, Battery E of this defense battalion shot down a Japanese bomber from above the clouds by radar controlled 90mm gunfire. This was the beginning of trouble in capital letters for those Japanese night raiders commonly referred to as Louie the Louse and Washing Machine Charlie.

After Guadalcanal was secured and cleared of the enemy, the 43rd Army Division followed the 3rd Raider Battalion ashore on the Russell Islands and another airfield was rapidly built for the use of our growing air strength. The 10th and 11th Defense Battalions arrived in the Solomons equipped with fire control and search radars. The 10th Defense took up positions in the Russell Islands and the 11th Defense defended the Purvis Bay area on Florida Island. In the meantime, the 214th AAA Battalion, Coast Artillery, U. S. Army, arrived on Guadalcanal well equipped with fire control radars and the necessary remote control systems for the 90mm gun batteries. The Army battalion relieved the 3rd Defense Battalion and permitted those battle-weary marines to seek a much needed rest in New Zealand.

With long-range search radars located at Guadalcanal, Tulagi, Purvis Bay and the Russell Islands, a radio circuit for radar reporting was established. Information passed over this circuit permitted accurate and rapid plotting of enemy planes approaching the Southern Solomons and alert antiaircraft defense made raids by Japanese day or night raiders a costly undertaking.

By means of the radar reporting radio circuit, centralized control of the radar air warning system became possible. With this control, came a new development. Night fighter planes were employed for the first time and by September of 1943 had accounted for seven Japanese bombers. These first night fighters in the Pacific war employed crude methods as compared to the radar-equipped and ground-controlled night fighters employed on Okinawa.

These first night fighters used a very simple technique that depended upon searchlight illumination for success. When a long-range search radar picked up a "bogie," unidentified or enemy plane, the night fighter took off from the airfield and climbed to an altitude estimated to place him above the incoming "bogie." While the night fighter was climbing for altitude and to make his "on station" report, the antiaircraft defenses had to be informed as to whose defense area was going to be the one wherein the night fighter would attempt his kill. This was done by setting a Condition One Beer or One Wine for each defense battalion area. Condition One Beer meant shoot the works, all guns and searchlights in action; Condition One Wine meant guns silent, searchlights only in action and that the night fighter would attempt the shooting down of the Jap in the area so designated.

When the "bogie" came into the range of a radar-controlled searchlight in the area on Condition One Wine, the searchlight illuminated the Jap and he was carried on his run across the area by the beams of all searchlights within range. While thus blinded and thoroughly illuminated, the befuddled Jap was pounced upon by the night fighter and erased from the scene in a ball of fire.

On 30 June 1943, the campaigns for the control of the Northern Solomons were begun with the seizure of Rendova Harbor and landings on New Georgia Island. The 9th Defense Battalion turned over its positions on Guadalcanal to an Army anti-aircraft battalion and took its guns and radars to Rendova. There, on 4 July 1943, the fire control radar of Battery E of this defense battalion tracked an incoming flight of 16 twin-engine Jap bombers and one Zero. The time was about 1430 and the day was ideal for visually controlled antiaircraft fire. The battery radar tracked the Japs into visibility and, when they arrived within fuse range, E Battery opened fire. Eighty-eight rounds were fired in about two and a half minutes by the four guns of this battery. When it was over, only four Jap bombers were left of the flight and the sky above Rendova was filled with the debris of the other 12 bombers and the lone Zero.

Twelve bombers and one Zero had been blasted from the sky with 88 rounds of 90mm ammunition, and marines had set a world's record for the most planes destroyed with the least number of rounds expended. Thanks to the fire control radar, the gunners knew exactly where those incoming Japs

would be when they started their bombing run.

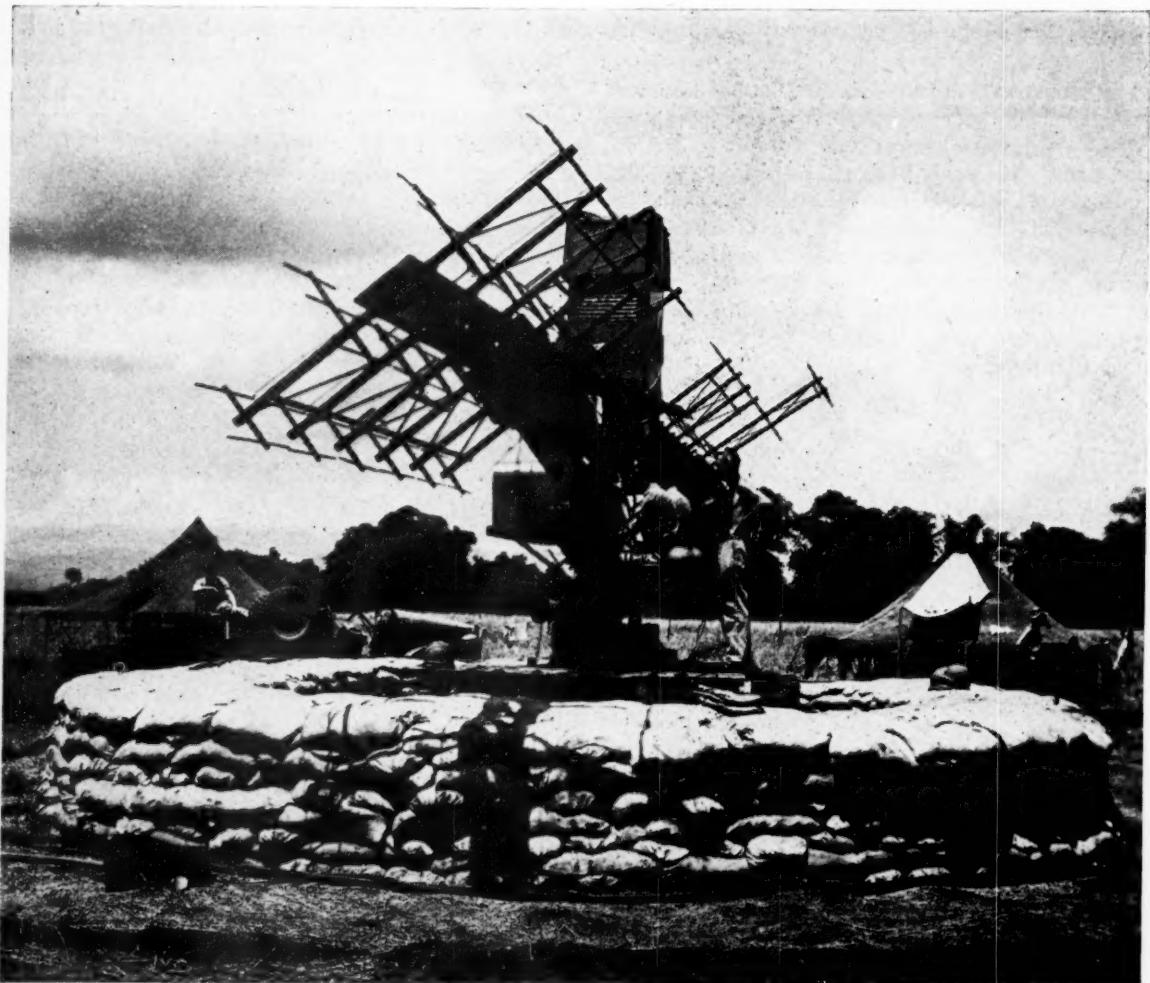
While the Rendova-New Georgia operation was still in progress, the 4th Defense Battalion, with Army and New Zealand troops, landed on the southern part of Vella Lavella Island. With their radars and antiaircraft guns, they had a merry time with the persistent Japs. Night after night, they poured effective radar-directed 90mm fire at Jap raiders seeking to destroy the Vella Lavella installations.

The invasion of Bougainville saw the 3rd Defense Battalion back in action completely re-equipped with search and fire control radar equipment. Here, too, marine radar crews gave a good account of themselves in spite of the handicap of dense jungle and high mountains that provided many blind spots by which sneak raids could be made, if the radar operator was not alert.

While the operations for securing the Northern Solomons were in progress, marines were not idle elsewhere with their radar equipment. The 5th

Defense Battalion had occupied defense positions on Funafuti and the 8th Defense Battalion was likewise engaged in the Wallis Islands. On 30 June 1943, the 12th Defense Battalion went ashore on Woodlark Island, off the northern coast of New Guinea, in a night landing. This was the first time radar equipment was landed from LSTs under such conditions.

The Northern Solomons campaigns also introduced to the Pacific war the first organized night fighter squadrons. On 12 September 1943, VMF (N) 531 started operations from the Russell Islands without ground control intercept radar equipment and only one radar-equipped plane. On 20 September 1943, this marine night fighter tried the first intercept of a Jap bomber over the Russell Islands. The attempt was unsuccessful due to lack of adequate ground control equipment and unfamiliarity with the use of airborne intercept radar in actual combat. This action, however, gave to marines the honor of having the first night fighter



This fire control radar spotted a flight of Jap bombers for a world record shoot on 4 July 1943 when 13 planes were shot down with only 88 rounds of ammunition.

aircraft in the naval service to go into action against the enemy.

VMF(N) 531 moved to Munda on New Georgia Island and on the night of 5 October 1943 attempted to intercept a Jap plane with an Army-operated ground control intercept radar to direct the proceedings. This attempt was also unsuccessful. On 28 October 1943, this night fighter squadron moved to new positions on Vella Lavella Island with their own marine-operated ground control intercept radar and with a marine officer as the fighter director officer. Results were almost immediate. On the night of 31 October 1943, this marine squadron controlled a Navy night fighter which shot down a Jap Betty in the vicinity of the Shortland Islands. The Jap plane was attempting to bomb a convoy en route to the marine landing at Empress Augusta Bay, on Bougainville.

THE war for the year 1943 culminated with the marine landings in the Gilbert Islands that featured the bloody battle of Tarawa and the return of the First Marine Division to action with the landing at Cape Gloucester on New Britain Island. Radar accompanied both of these operations with the 2nd Defense Battalion in the Gilberts and the 12th Defense Battalion at Gloucester.

The year 1944 brought sweeping changes to radar organizations of the Marine Corps. The defense battalions were reorganized and converted into antiair craft battalions by divorcing their seacoast artillery groups from them and placing them under Corps control as 155mm gun battalions. Marine Aviation blossomed forth with streamlined air warning squadrons to assume the early warning search responsibility formerly reposed on the defense battalions. In addition, the air warning squadrons were equipped for fighter director work with up-to-date and modern radar equipment. The newly organized AAA battalions received new model fire control radar equipment that surpassed in performance anything the old equipment ever attempted.

The use of the newly acquired airfields at Cape Gloucester and Empress Augusta Bay by our air forces enabled a crippling blow to be struck at the Jap air power concentrated at Rabaul. Emirau Island, 50 miles off the northern tip of New Ireland, was occupied by the 4th Marine Regiment on 20 March 1944, and from airfields there the Jap installations at Kavieng were completely isolated.

The Japanese naval bastion of Truk was now within range of our heavy bombers, and, with the aid of Admiral Halsey's fleet, it was given a thorough pounding. Japanese air raids on Allied positions in the Solomons and New Guinea became fewer and fewer and finally were practically non-existent. MacArthur's forces captured the Admiralties and began the rapid westward movement to neutralize all of New Guinea.

In the Central Pacific, Marine and Army forces secured the Marshall Islands without difficulty and

with practically no air opposition from the Japanese. The outer perimeter of the Japanese Empire's defenses was broken and the inner ring of defenses and the home islands of Japan lay open for attack.

The fall of Saipan, Tinian, Guam and Peleliu followed the capture of the Marshall Islands. The Japanese air force replied only to the Saipan and Tinian operation by some 40 air raids during the first six months of our occupation of these islands. The marine AAA battalions were present on these islands and made effective use of their new fire control radar equipment.

Two marine air warning squadrons were with MacArthur in the Philippines to provide air warning and fighter director service on the island of Mindanao. Iwo Jima was a bitter and bloody battle that required little in the line of radar equipment for its successful conclusion. It was not until the final campaign of the war on Okinawa that the Japanese air force again struck out with all the fury at its command, as it did in the days of the Solomons campaigns.

Marine air warning squadrons and AAA battalions, working in harmony with Army organizations, employed their radars and night fighters to their maximum ability. Snooping suicide bombers were intercepted by night fighters under the control of marine fighter director officers and ground control intercept radars. AAA battalions shot down planes by radar and cooperated with the air warning squadrons and Army units for the air defense security of the beachhead.

THE surrender of Japan found all marine radar organizations under full steam and at their top efficiency. The war was a long one and its hottest and bitterest days for Marine Corps radar were the days of the Solomons campaigns and the climax on Okinawa. How well marine radar crews performed their jobs with their electronic eye is mutely testified by the wreckage of Japanese planes strewn from Guadalcanal to the bloody hills of Okinawa. Whatever may be said of radar in the future and its part in the defeat of Japan, the part marine radar crews played cannot be overlooked.

Yes, marines had radar, too, and they used it from Bataan to Okinawa. They were first to use it on land, defensively; first to use it on land, offensively; first, with Navy aid, to employ it for fighter direction; first in the naval service to operate a radar-equipped night fighter in combat; first to land it on a hostile shore at night; and first in the Pacific war to use it to direct a radar-equipped night fighter in shooting down an enemy plane. In addition, in the hands of marines, it was responsible for a world record by a marine 90mm battery in shooting down the greatest number of planes with least number of rounds of ammunition. That, for one war, is a pretty good batting average in anybody's league.

END

Jury Rigs for Radar

The 9th Defense Battalion in the Solomons had to patch and improvise in order to keep warning and fire control radar sets on the air. The effectiveness of this work is evident in the number of planes shot down in 18 months.

By Capt Charles H. Beale, Jr.

WHEN radar was very young in the Marine Corps, there was a great deal of curiosity about its practical use, and many marines were very outspoken in their doubts. One of the biggest problems was a lack of spare parts to keep the equipment going. Consequently, there were a great many sets which had to be patched up by makeshift emergency repairs, more commonly referred to as "jury rigs."

When the 9th Defense Battalion landed on Guadalcanal on 3 December 1942, they had only a very limited supply of spare parts for the radar sets they brought with them. The elaborate setup of depots had not yet come into existence, and the meager supplies in the depot at Pearl Harbor were too far away to be of any use. As a result of this, the 9th DB (now the 9th AAA Bn) and other defense battalions in the Solomons area had to depend almost entirely on their own technicians for ingenious devices to keep the warning and fire control radar sets in operation. Although the 9th had few technicians, they were of high quality and all possessed the ability of teaching their subordinates. Several of them had been "hams," amateur radio operators, before joining the Corps and this background proved a great asset when the pressure was on and they had to improvise to keep their sets on the air. How well they accomplished this feat is borne out by the record of planes shot down during their 18-month stay in the Solomons area.

Among the technicians in the 9th were four men who were in the first class of radar technicians graduated from the first radar school at Quantico. These men, T. N. McGown, Stanley Krezel, Theodore Hitchcock and M. G. Jones, all rose to the rank of master technical sergeant before leaving the Pacific. McGown became a warrant officer in radar maintenance.

Almost all of the makeshift rigs used by the 9th can be credited to these men or the men they taught. As crew chiefs, they worked continuously with the younger technicians, most of them fresh out of schools, and gradually these new men began to get the picture of the Pacific.

There is no way in which a Stateside school can simulate Pacific field conditions, so most of the green men started to school all over again—Pacific style. They learned under combat conditions, and most of them came out very capable radar men. Everybody worked with the same view . . . to im-

prove the performance of the set and improve its value to the organization. It took a little while for them to become confident in their set and know its limitations and possibilities, because they had come to mistrust it before they had ever used it. The stories in the States had always been tales of woe . . . it was said that the sets were outmoded . . . that you couldn't track a target . . . that it was impossible to keep them on the air. In the Pacific they soon learned that they *had* to keep them on the air, if only for their own personal safety.

There was much skepticism as to the value of radar in war, but the commanding officer of the 9th DB, Col William S. Scheyer, gave radar in this battalion all possible assistance and the results surprised the skeptics. When radars broke down, he listened patiently to the radar officers' woes and approved changes and modifications proposed to improve radar performance. Gradually, the battalion began to respect radar, and with their respect came a greater cooperation from all hands. In true marine fashion, gripes resounded when a "snooper" sneaked in and unloaded a bomb without being detected, but equally loud were the cheers when a Nip plane was brought down by "unseen" fire (complete radar control). It's true that the old type fire control radars are a far cry from the streamlined sets we have now, but at the time it was the best because it was all we had.

THE long range search radar, by virtue of the diligent technical nursing of MT Sgt Hitchcock, performed yeoman duty throughout the Solomons campaign with a minimum of time off the air for maintenance. There were few Japanese raiders from the enemy airfields at Bougainville and Rabaul that this set did not detect when they were still far away. The battalion was usually alerted 15 minutes before the arrival of all big raids. Float planes attempting sneak raids by low altitude approaches were detected by fire control radars assigned to close-in search missions. These radars were not designed for such employment and consequently were not as durable as the long range search radars, but their day-in day-out efficient performances on search missions, in spite of disadvantages, were remarkable.

All the "jury rigs" used by the 9th DB in achieving its remarkable results with radar are too numerous to recount here, but a few of the most important ones are worthy of note. Upon many of these emergency rigs depended not only the performance

of a radar set, but the safety of several thousand troops as well. Some of the mock-ups were simple, some very complex . . . no one can be counted more valuable than another for without them the unit could not perform.

A fuel pump sprung a leak on a PE-84 (power supply used with the fire control radar) and the engine stopped. Investigation showed that the gasket was rotten, and when the spares were checked it was found that gaskets had been shipped short. The power van attendant took a piece of K-ration carton and carved out a gasket. This lasted a week, but when it began to leak, he had to replace it with the top of an old boot. This was a very satisfactory gasket, its value greatly enhanced in view of the fact that the boot once belonged to a Jap. Gaskets were manufactured from every conceivable article, including ponchos. It was a very difficult job to keep ordinary gaskets in good shape because of the climate. Power van attendants did a magnificent job of keeping motors maintained and in working order. They replaced filters with mosquito net and pumped water through the cooling system with a small pump on the side of a barrel. Most of the maintenance they knew didn't come out of the book.

ON Dog Battery's site at Rendova, a nearby mountain caused a serious condition of back echoes. The crew chief decided that a little chicken wire might help the situation when mounted on the back of his antenna. He made this modification, and, while it did not completely solve the problem, his operators were able to track targets through areas that had previously been dead for them. As a result, their data to the director for the 90mm guns was much smoother than it previously had been and greatly improved performance of the entire battery resulted.

MTSgt Krezel had continuous trouble with shorts in the "octopus" cable (main cable with many branches) of the IFF gear on the FCR. When he opened the main junction plug on the back of the control unit, he found it full of water. There is a mesh covering on this cable through which water can pass and seep into the plug. A visit to the Seabees provided some beeswax which proved very satisfactory as weather proofing, and no more trouble was experienced with this cable. When the beeswax wasn't to be had, it was found that the "cosmoline" served in the mess under the name of butter worked just as well.

No commanding officer in the Pacific was content to keep any set out of action during the early stages of an operation if it could be employed to the slightest advantage. As a result of this line of thought, the fire control radars were often employed for search missions as previously mentioned. Because the fire control radars have three scopes, the strain on operating personnel performing search

missions with these sets was greatly increased. When the set was designed, the range indicator was located on the back of the mount, and the veeder counter, which indicates range, was inverted. This required an extra man on watch to read accurate ranges. MTSgt Jones decided that the burden on the men could be lightened greatly by using a remote data station where range, azimuth and elevation could be read simultaneously by one man. He persuaded an NCO in battalion operations to construct the necessary scales and circles on drawing paper. He then took three spare selsyns, a spare junction plug and a data transmission cable and made his remote station. By making a small modification in the junction box and by adding pointers on the rotors of the selsyns, he was able to make a very satisfactory data board. He ran telephone lines to the 155mm Group CP so that range and azimuth data could be furnished for missions of seacoast artillery against surface targets. It greatly improved the situation as far as strain on operators was concerned and enabled the set to become a very valuable asset to the radar search net.

On the fire control radar, the azimuth indicator is a metal band which goes around the bottom of the mount, far below the vision of the operators. At night this azimuth data cannot be read without the aid of a flashlight, and it can never be read unless the operator looks away from his scope and leans over the side of his seat. Usually, by the time the data has been read accurately, the dope is cold, because the target is constantly moving at high speed. Consequently, during Condition Red, an additional man was required to read this data, and pass it along over the phones. MTSgt McGown got an old can, covered one end with an azimuth scale on white paper, and pasted it on the end of the can. The junction box was modified so that AC leads and azimuth leads could be brought to the top of the scope table. A spare selsyn was placed in the can, and the leads attached; from that time on, azimuth could be read right at the side of the azimuth scope by the operator. A small red dial light was added on the front of the can, and this was used to read data at night. McGown also juggled the wiring in the junction box so that telephone data could be passed out on the slip rings. It had previously been impossible for an operator to wear a headset on the mount, because the wire became entangled around the base of the mount. This modification allowed the operator to man a telephone and released the man formerly employed on the telephone watch.

Technicians at Charlie Battery installed a telescope on the antenna of their fire control radar and this post was manned during every raid. From this vantage point, they could spot bursts and correct the tracking of the radar as the firing run proceeded. This was also an aid in putting the radar on a target which had already been illuminat-

nated by searchlights on the outer defense ring. This battery tuned its set each day, and it was found that a spare dipole mounted in the top of a palm tree and fed by a twisted pair from the tweeter (the tweeter is nothing more than a small oscillator which sends an artificial signal upon which the radar tuning is checked and corrected, if necessary) gave the best signal upon which to tune. It was also found that a dipole made of wrapping wire and suspended from a "met" balloon provided the most accurate way for synchronizing batteries. They were able by this method to check directors and radars both visually and electrically . . . and obtain a "met" message at the same time.

One set had a lot of trouble with transformers in the high voltage rectifier of the FCR. This is a "bridge" type rectifier, and supposedly it will not perform without four transformers. There were no spares for these transformers with the equipment, so the loss of one meant shutting down the set. The crew chief, on checking the circuit, decided that it was possible to use the same transformer for two tubes if he could short circuit from one transformer to another. He accomplished this by matching a pair of spare dipoles, and when his set was turned on, its operation was normal. He operated at a little below normal voltage just to be on the safe side. It was later discovered that most of these transformers failed because of condensation within the transformer. This was especially likely to happen during the rainy season. This condensation offered a path for a high voltage arc of 11,000 volts. One crew chief, after tearing a faulty transformer apart to investigate the trouble, decided that this arc path might be sealed by heating the transformer with a blow torch. This boiled the pitch and tar in the transformer, and after cooling it was found that the transformer was again usable in emergencies.

Fox Battery found a way to fix a short in the high voltage cable that runs from modulator to high voltage slip ring on all FCRs. This cable had to be bent at a great angle to make it enter the receptacle. The cable contained a conductor, a

layer of insulation, a layer of shielding (ground braid) and then more insulation. After being stepped on several times, and because of the big bend in it, the weather usually softened the insulation enough so that the shielding could cut into it. This usually brought the shielding close enough to the conductor to cause an arc and short the cable. It was found that repair could be affected by cutting into the cable, stripping back the shielding some four or five inches and then smoothing the sharp edges. A different location of entry into the receptacle reduced the bend, and with a generous amount of rubber insulation tape these cables were again usable.

MTSgt Hitchcock had to jury-rig his LRSR many times to keep it going. He also added a great many refinements, such as drying ovens, cooling fans and telephone connections which, though not necessary to keep the set on the air, greatly improved the performance of men and equipment. One of the most important jury rigs he accomplished was made on the power supply. The small generator on the power plant was broken off in such a manner that it could not be remounted. Hitchcock mounted this generator on a board, and, after much experimenting and adjusting, he was able to use it for three months until a new one arrived. Since this was the only long range set in the area at the time, it was a very important emergency repair which vitally affected all hands. A way was also devised to prevent sheered water pumps and fans from going through the radiator. The grill on the front of the radiator was reversed and put on the motor-side of the engine. Although the pumps and fans continued to sheer, they hit this grill, and this prevented damage to the tubes in the radiator.

The Seabees made many of the jury rigs possible in the Pacific. They were never too busy to help a radar man, and their materials were never too precious to lend or give, even if it were the last thing they had. Every marine outfit is grateful to the Seabees for the fine cooperation they gave us, and we all know that without them a great many sets would have had far less operational hours.

Shopping Hints for Occupation Troops

Unless the Japanese method of selling goods is understood at the start, much hard feeling and misunderstanding will arise on the part of both purchaser and seller. Unlike most other countries of the Far East and the Near East, goods for sale in Japanese stores are almost without exception labeled and sold under a one-price system. Bargaining, haggling and "beating down" in price are practically unheard of. Exceptions include curio stores and the like, where objects of art and artisanship are sold, which are amenable to bargaining; the "Yomise" (night stalls) which, at stated

intervals each month, spread out along the street in certain sections of the cities; certain sections of some of the port cities that have been "spoiled" by the tourists, where the Japanese often throw over their own customs and adopt a free-for-all, catch-as-catch-can technique. But in the ordinary Japanese towns and cities unspoiled by tourists, the general method is one of clearly-marked labels and one price. The ordinary Japanese merchant is surprised and resentful at being berated because the purchaser thinks the price too high. His attitude is a calm "take it or leave it."—MAJ S. F. MORAN.

Officer Education

The education of every marine officer

should include a certain amount of training at the Naval Academy, according to the author, who outlines a practical way of achieving this aim. By LtCol T. A. Culhane

(AUTHOR'S NOTE: *These are random thoughts of an individual and do not represent official thinking*)

THE Marine Corps is and should remain an integral part of the naval establishment. It is the landing force of the Navy, the military garrison of navy yards and naval stations. It is the Navy's Army.

Considering the character of duties which have been broadly outlined above, the marine officer, if he is to properly carry out the tasks assigned, must be an expert in amphibious assault, land operations, and, in addition, must know thoroughly the operation of the naval service. He must be steeped in naval tradition and above all be a leader capable of training and obtaining the best results from the personnel under his direction. He must be able to analyze a naval plan completely, in order to know exactly where he fits into that plan and how he may best carry it out.

Aviators and other specialists must have this same basic knowledge if they are to carry their share of the load in support of landing forces.

Thinking of only the permanent, regular Marine Corps, the framework for expansion in wartime, the marine officer should be a highly-trained specialist capable of transmitting to those who will depend upon him the details necessary for efficient operation in the tasks assigned. He must be an expert.

The backbone of the education of the naval officer is the Naval Academy at Annapolis. At this institution the Navy man attains discipline and the ability to handle the complex machinery that is part of his everyday life. He learns the navigation, seamanship, naval tactics and gunnery, essential in making our Navy the efficient fighting force that it is. Here boys are molded into well educated men, capable in their profession.

The Marine Corps, because of the nature of its duties, does not draw its officers from a single source. It commissions them from the Naval Academy, from colleges and universities having Navy and Army Reserve Officers' Training Corps units, and from the Marine Corps schools. This method has proved satisfactory in most instances and it is believed that the Marine Corps should continue to draw from these sources. One of the main disadvantages of this method of procurement is that personnel so commissioned must spend approximately one year as an officer learning the basic principles necessary in the education of every marine officer. It may be construed that this is a year lost in making officers available to the service and as-

signment to duty with troops, the handling of which is so important to their success and the success of the service.

As food for thought, it is suggested that the education of every marine officer include a certain amount of Naval Academy training. This is not suggested as a change in the procurement of officers. It is suggested merely as a training desirable in welding the fighting team of the naval service into a more effective weapon.

How may such a thing be accomplished without complete revision of existing educational procedure? How could it be done without turning inside out scholastic requirements, accreditation and, in general, penalizing unduly candidates for commission?

AT the Naval Academy in Annapolis, there exists on the grounds the naval postgraduate school. This school occupies the site of the old Marine Barracks, which has been remodeled and added to in order to provide necessary instructional facilities. It could provide the basic establishment on which to build a school for future marine officers, providing that the postgraduate school was moved, and there has been much agitation from naval, educational and political quarters to have this school moved.

This building was erected as a Marine Barracks in about the year 1899. Approximately four years later, in 1903, at this barracks, the Marine School of Application for the instruction of lieutenants of the Marine Corps, appointed from civil life, began its session. About six years later, the School of Application was discontinued at the Naval Academy and the Marine Barracks resumed its status as a barracks, instead of its dual function of school and barracks. It continued as such for several years and then, undoubtedly due to lack of space at the Academy, was turned over to the Naval Academy authorities in 1917. It was assigned as quarters for post-graduate students in 1919.

This brief historical sketch is given so that it is readily discernible to the reader that the former Marine Barracks (Halligan Hall) at the Naval Academy is traditionally appropriate as a marine school.

It may be that the movement of the postgraduate school would not prove practicable. That being the case, other adjustments and accommodations could be made within the Academy.

Now as to the individual himself. We will take, first, the midshipman at the Naval Academy. On the completion of his third year (assuming the Naval Academy course to be four years) if he is

selected for the Marine Corps, he could have his warrant changed from midshipman, United States Navy, to cadet, United States Marine Corps. This change could quite readily be accomplished through established administrative facilities and he could then enter the basic marine course.

Questions naturally come up at this time. What about his graduation from the Naval Academy? Is he to be denied a degree of Bachelor of Science, to which he would normally be entitled?

The answer to this is readily forthcoming. The midshipman at the Naval Academy during his fourth year devotes his time, in the main, to those subjects which are professional. Certain of these subjects are necessary from an educational point of view. The majority are necessary only from the naval point of view and constitute refinements and naval application to the subjects which he has previously been taught. It would be quite a simple matter, utilizing the existent facilities, for students to be required to take necessary educational subjects and to modify or substitute for purely naval subjects, in order to satisfy the needs of marine officers' training. This would enable the ex-midshipman cadet, United States Marine Corps, to graduate with his class and to obtain the same type of diploma.

Let us take now the college and university Army and Navy Reserve Officers' Training Corps student. This problem is a little more complex. For thorough analysis, it would be better to group him in either of two categories, namely the undergraduate and the graduate.

On completion of three years at certain picked colleges and universities, with Navy or Army Reserve Officer Training Corps requirements, the undergraduate who obtains a required scholastic rating could be given the opportunity of taking a mental, moral and physical examination which would enable him to obtain a warrant as a cadet, United States Marine Corps, and enter this basic course.

If this individual has acquired sufficient credit from his university or college, it seems that in many instances his credits could, by established

accreditation process, be correlated with the non-selective basic marine officers' course and the student awarded a diploma in arts or sciences by the Naval Academy such as would be awarded any transfer student in a civilian institution of like standing. Should it not be possible to correlate his previous credits with those he would receive as a marine cadet, and give him a degree, he could still be awarded a certificate of satisfactory completion of the required basic course. The student, though, should be so informed in detail prior to his entry into this course.

The graduate's problem is comparatively simple. He has the degree from his college or university. He could be appointed a marine cadet without mental examination on the basis of his scholastic record and on completion of the basic course be awarded a certificate of satisfactory completion of this required course.

The question of appointment from Marine Corps schools presents no further problem. Personnel appointed from this course, on the basis of their educational background, could be handled in exactly the same manner as the graduates and undergraduates from selected colleges and universities.

Now we have a group of individuals of required scholastic and military background appointed as cadets and being trained at the Naval Academy for duty as commissioned officers in the Marine Corps. They are being educated by a department of that academy in a single course. They are participating in the activities of the institution with those who will be their contemporaries in the naval service. They are emerging from there with a common background and a partial understanding of each other's problems. This should fit them for closer harmony and greater cooperation in duties to come. They would graduate from this Marine Corps course together, with a degree or certificate which would be appropriate to their scholastic background. On graduation and commission they would take their place with troops, fully qualified to carry out their duties.

Marines Down 2,374 Jap Planes

Statistics compiled by Headquarters, Division of Aviation, indicate that Marine squadrons, from 7 December 1941 to 17 August 1945, shot down 2,374 Japanese aircraft in the air and lost 573 of their own planes in combat. Figures have been taken only from squadron war diaries and official records, some of which are incomplete for the early periods of the war. A breakdown by area and date of enemy planes destroyed follows: Wake Island (Dec41) 8; Midway Islands (June42) 37; Samoan area (Mar&Aug43) 2; Guadalcanal area (Aug42-Mar44) 1,520; Marshall Islands (Mar-Apr44) 10; Guam (Jan-Feb45) 2; Peleliu (Oct44 &Apr45) 2; Philippines (Dec44) 60; Okinawa (7Apr-7Aug45) 505; and carrier-based aviation (CV and CVE—Jan-June45) 228.

Battle of the Wana Draw

It was a minor

battle, but it had to be won. The first attack failed; the second had to be successful and it was, although not according to the way it was planned. *By Col A. T. Mason*

THIS is a story of minor tactics, of one of those innumerable small operations which in their totality make up a campaign. Just as the action of many squads and of many individual weapons together constitute the effort of a division, so may a battle be represented by the little struggle of the smaller tactical units: battalions and companies.

The First Marine Division had been in the line in the battle against the main Jap forces in Southern Okinawa for the better part of a month when the events which I propose to describe took place. Its regiments had in turn been in and out of the front line. Its very tangible advances had been made against the usual pattern of stubborn and suicidal resistance and against terrain which was bad at the start and became more appalling as the movement south toward Shuri continued.

Many lessons had been learned through failure and success. Units, in their aggressive eagerness, had often passed by pockets of resistance either under the cover of darkness or of ephemeral fire sup-

port which, as night fell or as the distance to the enemy decreased, had to be withdrawn. The exposed unit would then have to retire, often with difficulty, and the advance remained to be made again with a new investment in men and weapons. Occasionally units advanced to a position which again they could not hold, either because the unit was too small or because its flanks were exposed by its own individual movement, unaccompanied by a general advance along the whole immediate front. Once more, the job had to be done again and a new increment of loss had to be accepted.

Thus we learned things which we all knew but which, it seems, each individual commander must learn, as experience rather than as theory, on the field of battle; lessons which, it must be confessed, some never absorb at all. We learned that we must clean up as we go, that we must apply the means necessary to do the job once and for all and not be led by eagerness and impatience to bite off more than we could chew, that we must not occupy unten-



Wana Draw runs east-west, is 500 yards wide and is bounded on the south by a ridge.

able ground. We had to learn these things so that we did not pay over and over the price of a single piece of real estate. At the same time we had to strike a balance between the dictates of common sense and prudence, and the equally necessary ingredients of aggressiveness, daring and the willingness to take calculated risk. Put in more elegant terms and more thoroughly stated, these considerations may be said to sum up the problem which confronts every battlefield commander, great or small.

The minor battle of the Wana Draw—minor, but the culmination of a lifetime for many a marine—serves well as an illustration in miniature of what we faced on a large scale. We have an obstacle, repeated attempts to overcome it, frustration, disappointment and ultimate success.

For days we had been, after a long and arduous approach, up against what we then correctly believed to be the main Jap defensive position at Shuri. This sprawling town with its ruins, its outlying cliffs and precipices, chasms and valleys, crags and pinnacles, with its caves, graves, tunnels, shafts and concrete works, was defended with all the thoroughness which a strong, tenacious and ingenious enemy could devise. The heart of the defense was thought to be the so-called Shuri Castle, no Carcassonne but a congregation of above and underground concrete works based on a medieval fortress which housed the high command. On the northwest side, the final approach to the very face of the Shuri bastion itself was blocked by the defenses established in the draw or valley which took its name from the town of Wana, once situated at its mouth and long since smoke, ashes and rubble. Since it is the capture of this draw which forms the theme of our story, its configuration and its defense must be described in some detail.

THE Wana Draw runs east and west, and from north to south, crest to crest, is about 500 yards wide. Its length, from the cliff at its head to where it broadens into the western plain, is about 900 yards. A small stream runs through the draw but is not large enough to form an obstacle. In wet weather—and how much of it there is!—the bottom of the draw like all the surrounding terrain becomes so sticky and soft as to be impossible for tanks.

The north slope of the draw (that is, the slope which faces south) rises some 150 feet from the valley floor. It is crowned by a sharp and rugged ridge composed of coral rock. One particular rock is known as the Dragon's Tooth and for clarity we will call this Dragon Tooth Ridge. (We have our own local names for minor terrain features, names which most frequently originate in the ranks. It is a poor outfit which, in this battle, has not captured a Sugar Loaf Hill). At the west end of this slope once lay the town of Wana, now hardly distinguishable from the gutted and exploded ground around it.

The whole slope is pitted with caves, holes and the remnants of grave mounds, occupied by Japs whose exact number we do not know, and probably never will know. But there are sufficient and they are active.

At the head of the draw is a nearly vertical wall, so rough and precipitous that not even the cliff-monkey Japs can occupy it. In this wall there is a sharp, natural break which stops movement from north to south.

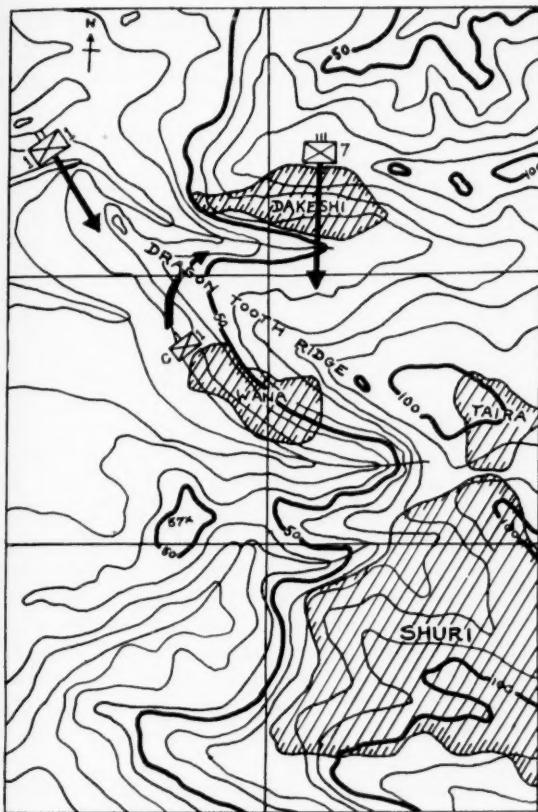
The draw is bounded on the south by a ridge which, starting from a rugged crest high enough to dominate Shuri itself by a few feet, falls away to a low saddle and terminates in a little knob which we know as Hill 57 (meters). Neither the head of the draw nor its far side is defended.

DURING the days preceding 14 May, the Seventh Marines struggled forward and fought its way on to the high ridge of Dakeshi, while the First Marines made a parallel advance in the valley to the west. On 14 May, the First and Seventh Marines mounted a joint coordinated attack with the Dragon Tooth Ridge as its objective. The attack opened early in the morning with a heavy concentration of artillery and other weapons which covered the ridges and filled the valleys with the very useful obscurity of smoke. The 1st Battalion, First Marines, with accompanying tanks, advanced from the west successfully and rather rapidly, and reached the western slope of the Dragon Tooth Ridge at an early hour. The Seventh Marines fought gallantly to overcome the strong defenses and rugged terrain which opposed its advance and joined up later in the day. The momentum of the attack carried Charlie Company of the First Marines into Wana itself, but after heavy losses the company was forced back and the day ended with the objective not completely taken (see sketch 1).

On the following day, the First Marines was withdrawn to reserve for rest after fifteen days of continuous and arduous battle. When the regiment returned to the lines on 19 May, it occupied much the same lines gained by it and the Seventh Marines on 14 May. Dragon Tooth Ridge was still unoccupied and the Wana Draw remained to be conquered.

On 20 May, the First Marines made a general attack. On the left, the 2nd Battalion moved into the army zone and, with the army on its left, advanced several hundred yards to the high ground occupied by the northern part of Taira. Here, increasing defenses and difficult terrain stopped the advance and the possibility, never very bright, of the 2nd Battalion continuing past the head of the Wana Draw and along the ridge to its south was eliminated by the impassable break in the cliffs to its immediate front.

Meanwhile, the 3rd Battalion advanced up the northern slopes of Dragon Tooth Ridge and occupied a line a few yards from its rocky crest. It

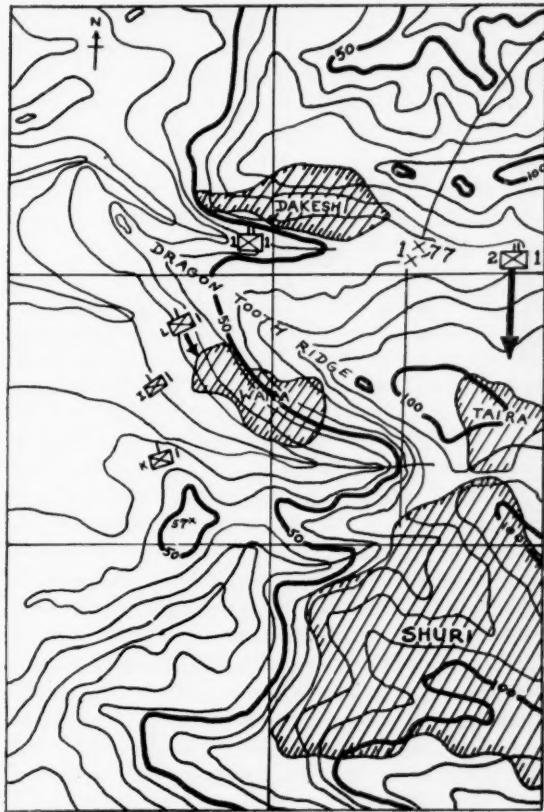


1. This shows the original plan of attack.

was impossible to dig in the bare and broken coral of the crest itself, while just on the other side were the Japs. From then on, a more or less continuous grenade and mortar duel was carried on over the crest by both parties.

During this period, tanks with infantry teams had been able each day to enter the mouth of the Wana Draw and to work over its north slope with fire. Daily tank losses from mines and enemy fire were not severe, but after several days the total began to be alarming. In any cases, this type of operation, while possibly annoying to the Japs, was not particularly valuable. While the tanks were operating, the Japs hid in their holes and when the tanks withdrew, their mortars and grenades indicated that they occupied the position in a strength apparently as great as ever. To take the Wana Draw, it was obviously necessary to send in a strong force of infantry which, supported by tanks on the valley floor, would advance along the slope of the ridge and clean up, slowly perhaps but thoroughly.

On 21 May, the 3rd Battalion executed such an attack (see sketch 2). The general scheme was that one company would advance along the ridge while another sent small groups across to Hill 57, now occupied by units of the Fifth Marines. The attack was preceded by a heavy rocket concentration against the cliffs at the head of the draw and was



2. The second attack failed through timing.

supported by artillery and tanks, and by fire from Hill 57 as well as from weapons emplaced in the valley to the west. The attack was well and strongly executed, but failed through one important miscalculation; in order to coordinate with the second day's attack of the 2nd Battalion, it was started at 1400 which proved to be too late. The advance along the ridge was necessarily slow because of the dozens of caves and holes which had to be individually cleared. The unfortunate death of the company commander as his company jumped off was not allowed to interfere, but by dark Love Company had only reached the eastern edge of Wana. This company made a determined effort to stay there during the night in order to resume operations in the morning. It hoped to remain so close to the Japs that the latter could not fire, but the Japs were better protected in their holes, and mortar, grenade and rifle fire forced Love Company to withdraw back around the nose. Item Company had got out into the middle of the draw where, protected by the tanks, it waited for an opportunity to be useful, but when the tanks went away at the close of the afternoon, this company also withdrew. A platoon of King Company got across to the vicinity of Hill 57 and remained there.

Thus another attack was abortive. The holes and caves were in coral rock. They could be blasted out

but they could not be closed, so the Japs were free to re-occupy them. After paying a first installment, the full price had yet to be paid for the Wana Draw.

With hopeful anticipation that the 3rd Battalion would be successful, the regimental commander had ordered his reserve, the 1st Battalion, forward, and Charlie Company occupied Dragon Tooth Ridge as a secondary defense position, remaining there even though the attack had failed.

A new attack was planned, once again to be supported by tanks and by all the various fires which by contrivance could be brought to bear, but this time to begin at 0630. The means were so ample that with a full day to do the job, the possibility of failure was hardly to be thought of. This time the price would be paid and full right and title would be acquired. Confidence and optimism were high but now a factor was introduced which always threatens the best laid plans and thwarts the most careful preparations. The fair weather ceased and foul weather set in. Hair was torn by commanders and staffs of high and low echelons with the usual result: the clouds continued indifferently to pour forth rain and the rain made sticky gumbo of roads and fields. Even amphibian tractors were bogged, and tanks were out of the question. Without tanks, the attack might still be successful, but the probability was much reduced and the very sound decision was adhered to, to wait until all means could be employed.

So we sat for some days, not entirely inactive but making little hay. One night the Japs came over the ridge onto Charlie Company and there was a brisk little mortar, grenade and rifle fight. When day came, the company counted 80 Jap dead on its side of the crest, with an unknown number on the other side. For a few dead and 20-odd wounded, this was not a bad exchange.

IN order to be doing something, a fire pump with hose and a 750-gallon tank of inflammatory liquid was brought up to Charlie Company. The idea was to spray the other side of the slope with the liquid, which was then to be set on fire with phosphorous grenades. This was successfully done but amounted to no more than an amusing diversion, for the area which could be covered by 750 gallons was small and the fire did not get into the caves. The effect was much the same as that achieved by the man who punched holes in the umbrella of the gentleman who was entertaining his wife.

A brief diary of this period might read something as follows:

21 May. Attack on Wana Draw failed. Plan to repeat tomorrow.

22 May. Rain. No attack.

23 May. Rain.

24 May. Rain.

25 May. A sunny morning, promising to dry up

the ground. Tanks report will not be able to operate tomorrow. Decision: no attack.

26 May. Torrential rain. Roads nearly closed. Yesterday's decision was a fortunate one.

27 May. Early morning rain; threatening to clear.

28 May. Continued rain.

Meanwhile, the arrangements for the final attack on the Wana Draw were developed to include the following features. The infantry was to execute the same maneuver as previously attempted. With the Fifth Marines on Hill 57, the objective of the 3rd Battalion, First Marines, was the high eastern end of the ridge on the southern side of the Wana Draw. The low saddle was to be unoccupied and covered by fire.

AS the opening event, an air strike against the north slope of the Wana Draw was planned. At 0600, 25 planes were to drop 8,000 gallons of our special lighter fluid on the slope. Careful briefing and personal reconnaissance by the squadron leader, together with colored smoke markers to be set off by Charlie Company on the crest of the ridge, would obviate all chance of mistakes. Since the liquid bombs were to be dropped unfuzed, no damage would result if one of them came over the crest of the ridge as the planes made their run from south to north.

As soon as the last plane dropped its load, the men of Charlie Company were to throw WP grenades over the crest and a WP mortar barrage was to start along the foot of the slope and creep up in order to start the conflagration as soon as possible. The planning of this feature was accompanied by cheerful anticipation that large numbers of Japs would come running out screaming with their pants on fire, and arrangements were made to take care that the withdrawal of their objections to our advance would be permanent.

As soon as the blaze died down sufficiently, one company of the 3rd Battalion was to advance as before along the slope, closing up holes and caves with demolitions, barbed wire and booby traps. Artillery would place HE and smoke as required on the high ground of Shuri. Charlie Company would place machine guns on the crest of Dragon Tooth Ridge to cover the far side of the draw. The near (north side) would be covered by tanks, by machine guns from Hill 57, and by 37mm guns and M7s (75mm) from positions in the valley west of the draw. If any other form of support was possible, it did not occur to those who drew up the plans.

It is time now to admit that the story to this point was written while the events it describes were actually in progress and that it was then laid aside to await a more opportune time for its completion. As so often happens, however, events refused to follow the book and we can only sigh, "The best laid plans of mice and men. . . ."

During the last few days covered by the diary above, the Fifth Marines, operating in the open

valley to the west of Shuri, had made notable gains against slight opposition, and it became apparent that the Japs were withdrawing the bulk of their forces from Shuri to positions further south. At the same time, suicide delaying forces were left in front of Shuri. The Wana Draw was still defended and all efforts of the 2nd Battalion to advance on the left of the First Marines' zone were met with effective opposition.

Nevertheless, the dam was breaking. On 29 May, a battalion of the Fifth Marines made a rapid and daring advance from the west, and occupied Shuri Castle with practically no opposition. Elements of the First Marines were immediately put in motion to move around to the west to occupy the rest of Shuri, and on this and the following day the Wana Draw was finally cleared out, not at all as had been planned.

Upon subsequent inspection, the Wana Draw proved to be as difficult an obstacle to progress as it had appeared to be during the attack. The ground was extremely rugged and the crest of the Dragon Tooth Ridge was so nearly vertical that the Japs had used scaling ladders for their counter-attack. This terrain characteristic is sufficient explanation why the attackers could not swarm over the top of the ridge to overwhelm the Japs below. All the ingenious digging which is so familiar a feature of Jap defenses was fully represented here, and the number of the dead, both marine and Jap, in various stages of vermiculation and decay, found in the village and along the slopes of the draw testified adequately to the ferocity of the struggle and to the tenacity and sacrifice of the protagonists.

The capture of Shuri, together with immediately subsequent operations, is a fine example of exploitation and pursuit. To mention that conditions of terrain and weather were such as to require the formation of human pack trains of replacements in order to supply bare essentials of food, water, and ammunition is to give an idea of the tenacity and energy required of all hands to effect so successful an accomplishment. The story deserves to be told in full as an inspiration to future marines.

However, the tale of the Wana Draw was intended to be a complete little yarn in itself, all tidily finished off with a successful attack and the cheers of the survivors. Battle, as we know, does not usually end in so clean-cut a fashion. The unexpected character of the progress of events may impugn the literary quality of the story but it marks the realism of combat in which the unforeseen must be expected (Recall Lewis Carroll, "Awaiting an unexpected event which nobody could foresee"), and in which plans must be laid aside in favor of that flexibility of mind which marks the good commander directing his troops to take advantage of the surprises and opportunities which occur on the field of battle. The apology for the story must be simply that it did happen.

Postwar Personnel Board Is Created

CREATION of a postwar personnel reorganization board to handle transfer of reserve and temporary officers to the regular Marine Corps has been announced by General A. A. Vandegrift, Commandant of the Marine Corps.

President of the board is MajGen James L. Underhill, who was assistant commander of the Fourth Marine Division during the Kwajalein operation and later island commander for Tinian Island and inspector general and deputy commander of the Fleet Marine Force.

An announcement by the Secretary of the Navy says the Corps will need up to 5,000 such officers, depending on the Corps' postwar strength. On the basis of a preliminary survey, General Vandegrift is confident there will be no difficulty in meeting the Corps' needs.

Applicants for commissioned officer ranks must be able to give 25 years' commissioned service from September 7, 1939, or from the date they were assigned to active duty if later, by the time they are 64 years of age. Applicants must also be about the same age as the present regular officers of the same rank and position on the lineal list. Applicants for warrant rank must be able to give 30 years' service by the time they are 60, taking into account all service, past or future, which would count toward retirement.

Officers who do not have at least four successful semesters in a recognized college or university will be required to take an educational test. However, this requirement does not apply to those seeking transfer to warrant ranks. Physical requirements are the same as at present.

General Underhill said the qualifications are based on the principle that the transferred officers must be able to compete on equal terms with officers now in regular service with whom they will be integrated. The qualifications will prevent the possibility of discrimination in promotions or assignment of duty, the general said.

Formal applications for transfer have been invited, the general continued. Applicants will appear before interview boards throughout the Corps. These boards will submit ratings to the board headed by General Underhill, which will "screen off" eligibles. Final selections will be made by boards appointed by the Secretary of the Navy.

World's Largest Airplane

Giant flying boat

is three times as heavy as the famous "Mars," has taken roughly three years to complete and is powered by eight "corncob" engines turning 17-foot props. By LtCol H. S. Mazet

NOW nearing completion in the Culver City, Calif., plant of the Hughes Aircraft Company is the giant H-4 flying boat, largest airplane in the world. Length 220 feet, span 320 feet, height 30 feet, it is powered by eight 3000-hp Pratt and Whitney "corncob" engines turning four-bladed props with 17-foot diameter.

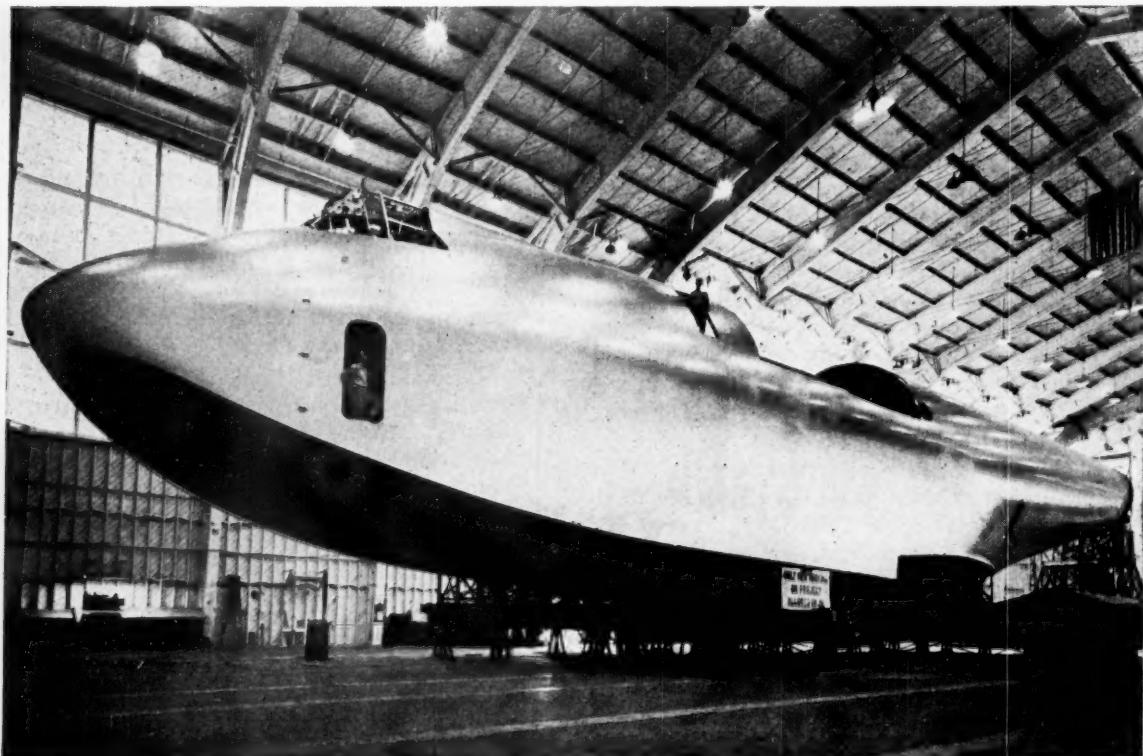
The entire craft is constructed of specially treated "Duramold" plywood and is engineered to lift a weight equal to 350 hospital patients in stretchers with doctors, nurses and a surgery—or three light tanks fully equipped. The airplane's gross weight is 200 tons, about three times that of the famous Martin "Mars."

Through a passage in the wing forward of the front spar, thence through the nacelles and firewall doors, the flight mechanic may inspect and make repairs on each engine in flight. All fuel, oil, hydraulic and pneumatic plumbing is routed along the spar, providing quick inspection. Four-

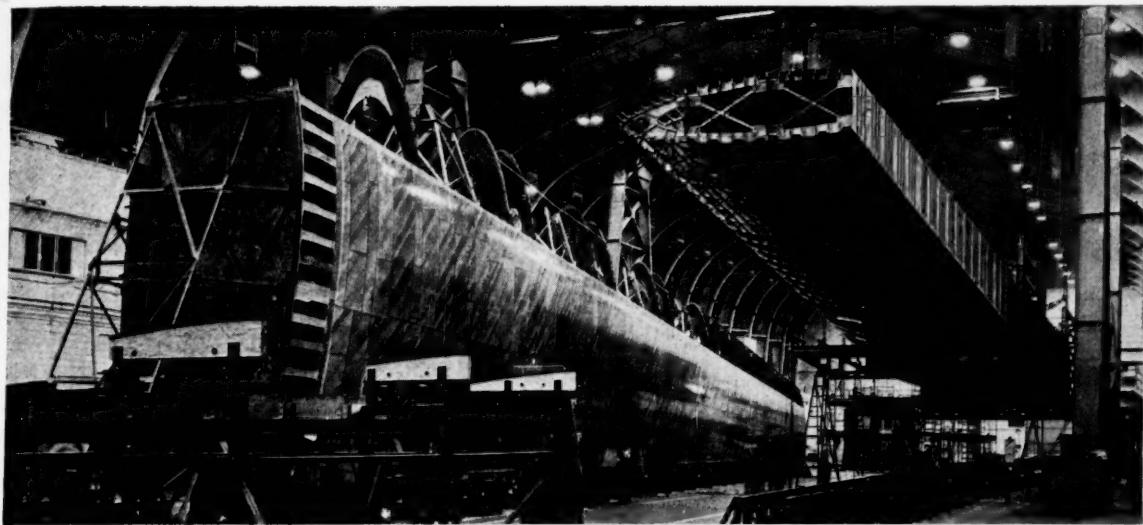
teen huge 1000-gallon tanks store fuel in leakproof compartments of the hull.

Due to their immense size, the control surfaces cannot be operated by the human effort of a pilot alone but are actuated by a hydraulic telecontrol system which transmits the pilot's controlling motions and amplifies his efforts many times, instantaneously.

Operating power of the system is supplied by electrically driven, high-pressure, hydraulic pumps which provide oil to sensitive relay valves actuated by the pilot. These valves are operated by conventional piloting controls making the pilot unaware that he is thus controlling the ship. High pressure oil is metered by the transmitting relay valves and directed by conduits to the control surface stations where the maneuvering impulses are intercepted by receiving relay valves which, in turn, admit oil to power cylinders containing pistons connected to



The hull of this monster plane contains leakproof compartments for 14 huge 1000-gallon tanks. The fuselage is constructed entirely of specially treated molded plywood.



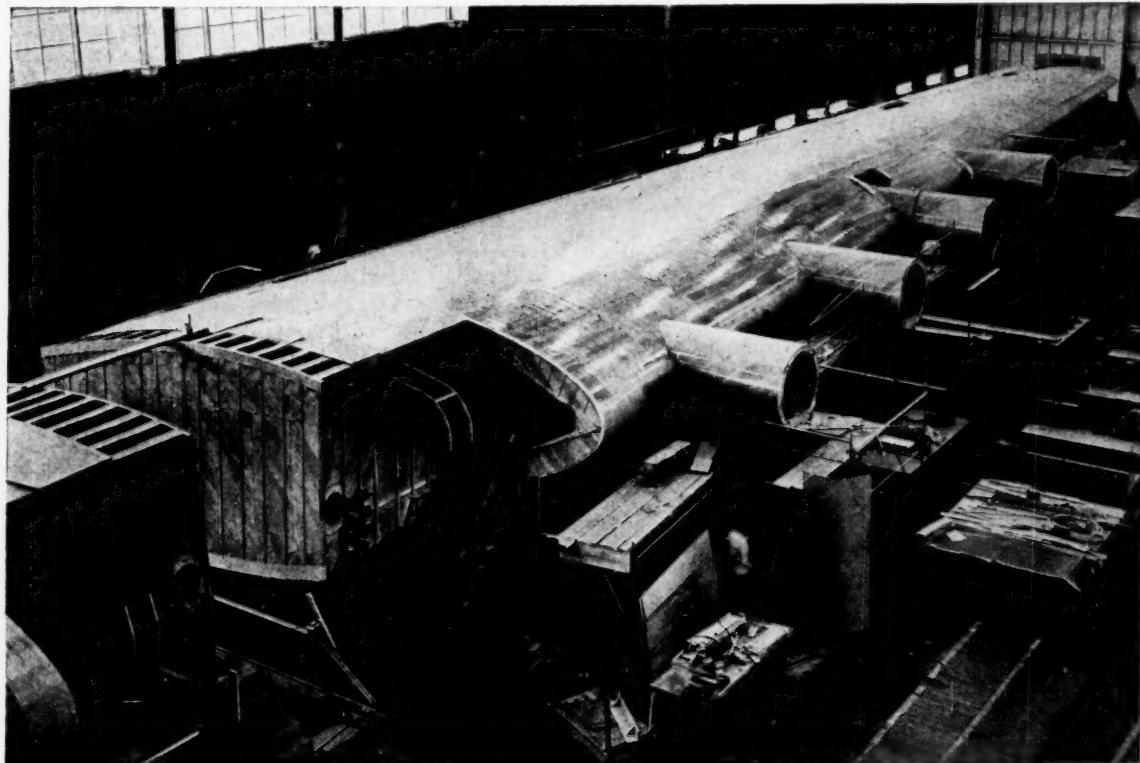
Installing the trailing edge of this giant wing requires smooth engineering. The plane's controls will not operate by human effort alone, so telecontrol is employed.

the control surfaces, operating them at exactly the rates of motion desired by the pilot.

This hydraulic telecontrol system is not only capable of transmitting the pilot's motions to control surfaces, but, being reversible, it also signals

gust forces back to the pilot, thereby anticipating impending changes in the plane's attitude.

The H-4 is one of the first warplanes converted to peace-time uses. It has taken roughly three years to complete and has cost twenty million dollars.



Through a passage in the wings, the flight mechanic may inspect or repair each of the plane's eight 3000-hp engines in flight. The engines turn 17-foot propellers.

The Aerial Photo in Amphibious Intelligence

Few secrets are hidden from airborne cameras, which can

pick out not only enemy positions but even gun calibers. *By LtCol Thomas J. Colley*

OUR present written combat intelligence doctrine, which was based on experiences in World War I, holds that the majority of the usable and sound combat intelligence comes from one source—the interrogation of prisoners of war.* Experiences of the war just ended in the Pacific have proved conclusively that the aerial photograph gained there an unquestioned ascendancy over the prisoner of war as a source of tactical enemy information, especially in the planning phase before landing on enemy-held territory.

The reasons for this ascendancy of the aerial photograph are several. First, due to the inherent nature of amphibious operations, prisoners of war from the area to be invaded and other usual sources of information of the enemy and of terrain under enemy control are almost never available to the G-2 of the attacking forces until D-day or later. During the planning phase he must therefore look to other fields. The time-honored land warfare expedient of sending patrols out to make detailed reconnaissances of the terrain, to watch enemy activity and to take prisoners or documents was, in the Pacific war, nearly always impracticable prior to an amphibious operation against a restricted land mass, not only because patrols of white men are so readily distinguishable from Orientals or the natives of Pacific islands, but also for the more serious objection that the element of surprise would have been lost in the landing if the patrol had been discovered.

Second, the Japanese code of Bushido, which makes it a personal and family disgrace for a Japanese soldier to surrender, resulted in few prisoners of war, at least until the ultimate stage of conquest of an island objective. At such a time tactical interrogation usually helps but little in the completion of seizure of the objective, although later interrogation may produce information of general value to ensuing operations.

Finally and fortunately, the photographic equipment available at the outbreak of the Pacific war was good. In the naval service alone the K3B, K3A and K20 cameras, flown in TBFs and PBYs, were taking verticals and obliques of high quality for training purposes by 1941. As soon as the pattern of amphibious operations and associated intelligence began to crystallize, it became apparent that

the aerial photograph was destined to play a large part. This placed emphasis on development of better equipment, resulting in the production of such cameras as the K17, K18 and F56, flown in the high-performance F6Fs, which flew dozens of missions daily throughout the Pacific theater. Improvements in processing equipment to handle the vast output of photographs kept apace, with even ship-borne laboratories capable of turning out hundreds of prints an hour.

The aerial photograph was normally the only agency which could give us, during the planning phase, accurate and current information concerning the tactical disposition, defense works and weapons of Japanese forces located in the target area. Similarly, detailed information of the coastal terrain and hydrography of the target area in most Pacific amphibious operations could only be gained from the aerial photograph. Much of the ground had never been mapped accurately, if at all. In other cases Japanese surveys had not been available to our forces. Much of the navigational and hydrographic knowledge had been passed down from mariner to mariner, rather than reduced to writing in the form of *Sailing Directions*, *Pilots* or *Charts*.

While most of the ground information and terrain maps were produced from the stereographic study of strips of overlapping verticals in black and white, hydrographic conditions were determined chiefly from vertical kodachrome transparencies. In these the relative depths of water can be readily told by the variation in color of the water as reproduced in the film. Live, submerged coral can be differentiated by its greenish color from the coral which dies and is turned brown by strong sunlight when receding tides leave it awash or dry.

Pre-invasion strikes by air and surface craft were



Figure 1: Betio as shown on best available chart before 1943. Compare with color map.

*For example, FM 30-15, dated 7 December 1943, states in par. 2(b): "Prisoners of war and captured documents are the *best source of information of the enemy* only if properly handled."

directed against targets located by photo-interpretation, as were the naval gunfire and air missions in close support of the landing itself. Following these missions, photo-reconnaissance permitted the accurate assessment of damage, which determined whether missions had to be fired again to complete the desired destruction.

In addition to its contribution to intelligence for the immediate landing phase of amphibious operations, the aerial photograph, through its interpreters, provided the bulk of the information available on location of enemy reserves, dumps, command posts, artillery, tanks and motor transport in rear areas as the land attack was pressed home. Many of the night harassing missions and scheduled destructive fires of both field artillery and naval gunfire were fired on the basis of air-photo intelligence, cross-checked, when possible, by tactical or artillery air observers.

Of course departmental intelligence from other sources was available to the G-2 involved in amphibious planning and it helped in great measure, but by far the greatest share of the detailed knowledge of the Jap's tactical situation and of the terrain on which we engaged him had to come from the aerial photograph.

As an example, let us consider the combat intelligence problem posed in the case of Betio Island, Tarawa Atoll, which the Second Marine Division seized after a bloody four-day assault, 20-23 November 1943.

This tiny island objective two miles long and but a half mile wide, every inch of which was organized for defense and occupied, offered no possibility for the landing of reconnaissance patrols. While much information was available from previous inhabitants and departmental sources, some of the most basic was lacking. For example, Figure 1 shows the size and outline of the island of Betio according to the best map available before the first photographic reconnaissance flights in 1943; this was a hydrographic chart the original survey for which was made by the United States Exploring Expedition under the direction of Commander Wilkes, in 1841! Contrast this with the shape of the island as shown in the fold-out map, the outline of which was made by aerial photomapping means a few months before the attack.

But this was just the beginning. The terrain on which the enemy was to be met was now determined exactly as to shape and size. Even relief maps of the island were now being made from the stereostudy of aerial photographs. But what of the enemy's installations, weapons, obstacles, equipment, and strength?

The results of the detailed interpretation of many sorties of aerial photographs, vertical and oblique, checked against each other (Figs. 2 and 3), up to the latest time this information could be widely promulgated, appear on the fold-out map which is a reproduction of the actual enemy situation map



Figure 2: Arrow marks beach barricade in vertical photo of Betio's southwest corner.

issued within the Second Division before sailing from its New Zealand base. Much more information from the photographs, such as detailed estimates of enemy strength and weapons, broken down to show the totals of those which could defend or bring fires to bear upon attackers approaching the various beaches, appeared elsewhere in written form. But to go back to the situation map:

To make the map more readable to lower troop commanders the installations were drawn as they appeared to the interpreters, rather than merely plotting symbols in the general locality to indicate the installation. This device required the explanatory boxes, which delimited calibers of weapons housed in the various emplacements as closely as interpretation would permit, and gave a realistic view of the enemy defense structure.

To enhance this visualization even further, photo interpreter-draftsmen were utilized to draw perspective sketches of the various forms of rifle-trenches, pillboxes, emplacements and obstacles as they saw them in the stereopairs and obliques. These sketches were keyed to the similar items on the map with capital letters, as shown at bottom of fold-out map.

Much of the information shown on this map could not have been known except for the results of comparative photo interpretation, which results from the study and comparison of aerial photos of the same area taken at frequent intervals. For example, certain weapon emplacements which were not initially visible in vertical overlapping pairs due to careful overhead camouflage were revealed in the excellent obliques furnished by carrier groups which

participated in the softening-up strikes. Still other emplacements which did not appear in the later verticals were nonetheless known by virtue of the fact that earlier coverage had shown the construction work on the gun emplacements before the camouflage had been erected. Although the gun may never have appeared in any photo, the caliber could be predicted almost exactly from the calculated dimensions of the emplacement seen earlier.

The production of this enemy situation map, embodying the bulk of the information known up to the time of sailing, did not, however, end the vital role of the aerial photograph in this particular operation. Sorties were flown by carrier-group reconnaissance airplanes at stipulated times throughout the approach phase and the assault phase of the operation. A great number of additional enemy installations and a few corrections to those shown on the map were interpreted from the later sorties and promulgated to the division in the form of an overlay, while en route to the objective.

The latest sortie to influence the initial landing was flown at about 1100 on D minus 2 and was dropped to the division headquarters on its ship by about 1600 the same day. A hasty interpretation by aerial photo officers of the division staff revealed only one significant change—the presence of a row of new tetrahedron-shaped horned scullies on the reef across half the width of Red Beach Three, which extended from the eastern end of the runway to the main pier, and on which the left flank battalion was to land. In addition, there were a few more to the west of the pier, in the way of the center battalion. Before dark this vital intelligence was flashed to units concerned by visual signals, allowing them 30 hours in which to modify their landing plans to fit the new situation.

Forewarned, the attacking waves of LVTs and other landing craft evaded these obstacles on D-day and thereafter. It was just as well, for later investigation by engineers showed that, although there was enough space so that assault landing craft



Figure 3: Oblique photograph looking eastward over Betio Island shows the southwest corner of the island in the foreground. Arrow marks same barricade as in Figure 2.



Figure 4: Intelligence photograph of typical beach barricade on Betio Island shows the accuracy of interpretations sketched at "A" at the foot of the fold-out map.

could have gone between the tetrahedrons, those spaces were crossed by thin steel wires attached to the horns of Model 96 anti-boat mines. On another occasion one of these powerful hemispherical mines threw an LVT ten feet into the air, smashing it beyond repair and killing all occupants.

Prior to and during the seizure of Betio, naval gunfire and air missions were frequently fired on the basis of aerial photographic information, as mentioned earlier.

By the time the smoke of battle had cleared from Betio many of the enemy's defensive installations had been completely destroyed, but a most meticulous study of the remaining defenses was already underway. This study was made jointly by technical specialists from JICPOA and personnel of the G-2 section of the Second Marine Division, who carefully measured, photographed and sketched every type of emplacement, barricade, obstacle, fox-hole and weapon and summarized the whole.

The study revealed that the enemy information produced from aerial photographic interpretation

had been surprisingly accurate. The number of emplacements for the various weapons, as well as their calibers, had been determined almost exactly. Where the interpreters had called the heavy AA guns 120-mm they were in fact 127-mm—a close estimate for a naval weapon not previously known to be employed ashore. Emplacements labeled "HMG to 40-mm" in many cases actually had 37-mm guns in them; practically all others of this category had 13-mm machineguns mounted. The obstacles in virtually every case turned out to be exactly as described by the API men.

But more interesting than the accuracy and completeness of the aerial photographic intelligence for this campaign was the fact that it constituted by far the greatest share of the vital tactical intelligence available to the troops who took Tarawa—and that, it is conservatively estimated, was more than 90 per cent complete.

Similar results in succeeding operations in the Pacific have only confirmed the ascendancy of the aerial photo as the primary agency from which amphibious intelligence is produced.

Any member of the Third Marines who fought on Bougainville may obtain a free copy of "A Ribbon and a Star," by John Monks, Jr., and illustrated by John Falter—a book about the Bougainville campaign—by sending his name, serial number and address to which he wishes the book shipped to Henry Holt & Company, Inc., 257 Fourth Avenue, New York 10, N. Y., before April 1, 1946.

Counter-Intelligence

this, and many things done as a matter of course are part of it. The idea is to keep useful information from an enemy or to mislead him. *By Maj Thomas F. Mullahey, Jr.*

There is nothing mysterious in

A WEEKLY journal of wide national circulation recently found this paradox worth comment in one of its humorous departments: that in the military hierarchy the intelligence officer and the counter-intelligence officer are the same person. There is, of course, a distinction, though one not nice enough to rob the laity of a chuckle. For even military men often do not readily see the difference between intelligence and counter-intelligence.

Military intelligence comprises information of the enemy, evaluated, interpreted and collated, while counter-intelligence is made up of those measures taken to prevent the enemy from gaining useful information of our forces.

The name of counter-intelligence has suffered at the hands of Hollywood spy thrillers, yet it continues a useful, honored military trade. It is not a black art practiced by bland individuals of uncertain nationality against a melodramatic backdrop of intrigue. If it is an art at all, it is a sweaty, hard-working one, done more often in the field than in drawing rooms, and by ordinary people like you and me.

Counter-intelligence is divided into two types; departmental and combat. Departmental counter-intelligence is the business of the War and Navy Departments, the Department of Justice and the Offices of War Information and Strategic Service. It involves the suppression of espionage, sabotage and subversive activity within the jurisdiction of the United States Government. Agencies of these departments and offices also institute counter-espionage and counter-propaganda in all quarters of the globe in cooperation with our allies. Combat counter-intelligence, which is more our pidgin, is more limited in scope. It is the work of combat units in the field to conceal our situation from the enemy or deliberately to mislead him. For simplicity's sake, in the rest of this article, counter-intelligence shall be construed to mean combat counter-intelligence.

A logical division is possible—into active and passive counter-intelligence. Active counter-intelligence refers to the application of positive measures, such as feints and demonstrations to befuddle the enemy. Passive counter-intelligence relies upon negative means to keep the enemy in the dark about our situation, as in the skillful use of camouflage.

The responsibility for the adoption and maintenance of counter-intelligence measures in a com-

mand belongs exclusively to the commander. He has his 2 staff section to assist and advise him and will, in almost every case, delegate to that section the task of formulating and executing counter-intelligence plans. But this delegation never relieves the commander of his responsibility; it always remains his alone.

Counter-intelligence measures, both active and passive, are many: secrecy discipline, concealment, tactical measures (including feints, ruses, demonstrations, counter-reconnaissance screens and the like), restrictions on the preparation and use of documents, security of signal communications, precautions in logistical movements, regulation of press and radio, military censorship. These are all familiar faces, but seldom associated together in the popular mind as counter-intelligence. A closer look at each of them will sum up to a good general impression of what this thing counter-intelligence is.

Secrecy discipline boils down to security consciousness on the part of all ranks. We all pay lip service to security and yet violate it in a thousand small ways. We know that it is breached constantly, yet we are never personally aware of breaching it ourselves. The Pharisaical practice of seeing our brothers' sins to the exclusion of ours is human nature. But it must be remembered that even from the time our profession, which is the second oldest in the world, was first practiced, few if any military operations ever suffered from being "too secure."

OUR enemies keep elaborate espionage systems from whose prying view no barracks or staff room is too remote; no shred of information is too mean or too insignificant to escape their diligent eyes. If hostile espionage is a 24-hour-a-day, 7-day-a-week job, then the job of our forces to counteract it lasts 25 hours a day, 8 days a week.

Many things conspire to provide the enemy with as much information of our forces as he cares to handle. Conceit, a misplaced faith in the integrity of one's hearers, and a vocally over-zealous enthusiasm for one's job or unit are a few. And alcohol, when taken in quantities beyond the capacity of the container, is an effective catalyst in the security-breaking process.

A commander, then, must parcel out to his staff and subordinate leaders just enough information to permit them to function with a maximum of efficiency, yet not enough to cause a hazard to security.

ity. This broad rule, of course, must be applied with common sense and judgment.

In close connection with this last matter, a staff officer or a unit commander must use the greatest discretion in conversations with persons unauthorized to share information he will undoubtedly possess from time to time. Idle curiosity is a native fault to all of us and everyone likes to "know a secret." A good guide for discouraging inquisitive persons who try to wheedle information from you lies in a variant of the child's retort: "If I told you, it wouldn't be a secret any more." Good-naturedly done, this can be most effective. Regrettably, one still finds in some officers a damnable eagerness to broadcast information which is calculated to mark them as "in the know." Should you ever find this urge upon you, refer your hearers to *Life* magazine and then talk about the weather. And remember that this urge generally varies in inverse proportion to rank, so admonish enlisted clerks and assistants constantly that they keep to themselves information they cannot help but obtain in their routine duties.

SECURITY discipline also extends beyond that unhappy circumstance—capture by the enemy. Intelligence doctrine constantly stresses this warning: "In case of capture by the enemy, military personnel are required by international law to divulge *only* name, rank, and serial number, and *nothing else*." Still it appears, in the light of recently captured Japanese documents that some, even officers of field rank, have sinned against this commandment! It is easy to understand the mental depression attendant on capture, or to visualize men in traumatic shock talking out of their heads to their captors; but it is hard to conceive that carefully trained American military men would talk for hours on end, days at a time, upon technical subjects with a precision not common to men in melancholia or shock. A captured Japanese interrogation report on a flying officer of field rank attests that this officer treated his captors to a detailed account of the operational capabilities, performance and mechanical makeup of the latest types of planes used in the theater in which he was captured. He was further so helpful as to volunteer information regarding IFF, with whose workings his interrogators obviously were not familiar. But you may wager that the information was forwarded to a place where it could be acted upon with prompt efficiency.

We must be prepared to give this officer the full benefit of any doubt. For we have no way of knowing what physical or mental stress was placed upon him to elicit this mine of information. Yet the captured document made no mention of any such stress and, being prepared for official Japanese consumption only, would have no reason to soft-pedal the use of a "third degree." Several other captured documents in fact enjoin all units to cap-

ture as many Allied prisoners as possible and to treat them well in the interest of gaining information.

Concealment, as a counter-intelligence measure, embraces the proper use of ground forms, darkness, smoke, natural vegetation and the artifacts of camouflage. Tactical doctrine teaches their detailed uses and every troop leader follows it as second nature often without realizing that he employs an important counter-intelligence measure at the same time.

Camouflage is perhaps the most widely used means of concealment. As such, a few words of special emphasis on it are included here. The mission of camouflage is to keep the enemy ignorant of the existence of certain installations and dispositions or any changes in them. When successful, it not only conceals from view the objects camouflaged but also disguises the fact that camouflage has been used. For this reason, inept camouflage is worse than none at all.

Every staff officer and every troop leader, either of a fire team or a combat team, must be constantly alert for breaches in camouflage discipline. The only passing grade is 100 per cent; either it is perfect or it is worthless. A company, for example, may be letter perfect in camouflage training and may occupy a position which cannot be detected on the best aerial photo—until some individuals decide that washday is at hand. A scattered display of approximately white underclothes hung up to dry nullifies the effect of an otherwise well-camouflaged position.

Tactical measures for counter-intelligence include all deceptive maneuvers and displays of strength. A commander who is ingenious and resourceful in the use of tactical stratagems and ruses will find many methods for misleading the enemy and concealing his own intentions. Every great captain in history has demonstrated his flexibility of mind by using such tactical measures at a judicious time and at a critical place. These measures must not be used for their own sake as a conceit or for theatrical effect upon the onlooker; for bungled or brought untimely off, they work more harm than good.

WHEN Field Marshal Montgomery prepared for his attack at El Alamein in late October 1942, his plan involved a break-through at a strongly-held point in the German-Italian line rather than at a relatively weakly-held point. Beguiling Rommel, he formed a truck park in rear of the selected break-through point and during darkness each night groups of Mark IV tanks disguised as trucks were brought up to the truck park from the X Armored Corps area far behind the lines. An equal number of trucks were withdrawn each time. When the attack was launched, Montgomery's armor was poised for the break-through, and in the guise of a truck park! The subsequent rupture of the Axis

line and the 1300-mile dash to Tunisia now comprise a bright chapter in the history of this war. A well-planned and executed counter-intelligence trick had worked.

Of a passive nature, token concentrations, simulated bivouacs, and dummy works are tactical counter-intelligence measures. Counter-reconnaissance also falls within this category. Ground troops employ outposts or patrols as a counter-reconnaissance screen. Fighter aircraft are also used for counter-reconnaissance as interceptors of hostile aircraft.

RESTRICTIONS on the preparation and use of documents form a necessary part of counter-intelligence functions. Extreme care must be taken of anything of a compromising nature set down in black and white. The need for secrecy discipline in connection with highly classified documents needs no further exposition.

For both planning and operational phases, operations may be given code designations and places given artificial names for security reasons. They are used in all correspondence and are changed when the commander decides that they are likely to have been compromised.

Orders and plans are assigned a *top secret* classification. In them are instructions for the width of their circulation and for their disposal when capture appears imminent. No classified material should be carried by persons on ground reconnaissance in disputed territory, nor in planes flying over a combat area. Should any classified document be lost in the field and its recovery by the enemy be even remotely possible, higher headquarters must be notified immediately. This is common sense. Steps can be taken forthwith to ensure that the lost document be of no more than curiosity value to the finder by altering our existing plans and orders.

Signal communications security as a counter-intelligence measure comprises all steps taken to deny the enemy such information of military value as might be derived from our communication systems. Reliable cryptographic systems are devised. As documents of a highly classified nature, they are naturally guarded closely. When in use, they are protected by avoiding repetitious content in messages and other clues to a listening enemy. No single communications agency is to be used too much and it must be remembered that radio is the least secure agency of all. Correct procedure must be maintained at all times and authentication insisted upon for each message. Circuits are monitored closely to assure this. Traffic volume may also be adjusted to prevent arousing enemy suspicions of an impending operation.

The logistical movement of troops and equipment is regulated with a view to counter-intelligence. Prior to embarkation, organizational and individual gear must not be so marked as to divulge the iden-

tity of organizations, the ships to be used in the movement or their destination. Decampment and embarkation phases often are the most trying times for the maintenance of security. Troops must be warned emphatically that security violations through loose talk and public speculation about an operation will be met with severe disciplinary action. All officers, particularly censors, have to be especially alert for security offenses during this dislocation period.

The fact of the embarkation of troops cannot be completely concealed. But leakage of information regarding the purpose of the embarkation can be minimized by going about it as though it were another landing exercise to be held in the immediate area.

Press and radio regulation. News coverage in World War II was more extensive than in all previous wars. The volume of press and radio reports, not to mention the speed with which they reach newspapers in the United States, is today astonishing. The sensible control of information must move apace with the volume and speed of these reports by correspondents, broadcasters and photographers. The regulation of reporting is not done in a captious sense but out of military necessity, to confute enemy intelligence.

A great deal of tact must be used in dealing with journalists; theirs is a highly competitive trade and one in which success is often gauged by the spectacular aspect of reported news rather than undressed fact. Yet it should be remembered that representatives of the press and radio have a vastly important mission: to keep the American public the best-informed in the world. They should be shown every courtesy and be given every means to make their mission easier.

Censorship of personal mail is an obvious necessity for all armed forces in time of war. Nearly every officer in the Marine Corps will remember with a grimace his days as a censor of troops' mail, for it has been estimated that marines are the most prolific letter-writers since the Apostles. But if censorship is necessary, a careful inspection of each letter is necessary, lest compromising information be transmitted through the mails. Censorship is meant not so much for the prevention of direct enemy seizure of mail as the assurance that the addressee, usually not a security-conscious person, will have no important information to let out.

From this brief glance at counter-intelligence measures employed by units in the field, it is plain that a great number of things which are done as a matter of course are actually part of that mysterious thing, counter-intelligence. Nor are they the nebulous work of high commanders and G-2s. Commanders and intelligence officers, it is true, initiate counter-intelligence planning and supervise its execution. But the men who make it click are all those who wear the uniform of the United States.

Southward from Shuri

The 1stMarDiv caught the

enemy off base at Shuri and slogged south after him. The drive opened the way to the China Sea and over-rode Kunishi Ridge to the ocean. By MajGen Pedro A. del Valle

THE pressure put upon the Japanese all along the Shuri positions by the TENTH ARMY was followed by a drive south on both flanks. Two relatively fresh units, the Sixth Marine and the Seventh Infantry Divisions, had rendered the position untenable.

Accordingly, the enemy withdrew, under cover of extremely bad weather which impeded both our observation and rapid pursuit. But in withdrawing, he left strong delaying forces, especially in the center, about the town of Shuri. These forces occupied formidable cave positions and were evidently ordered to stay and fight to the death. Frontal attacks all along the line were thrown back, or limited to small gains.

Deep mud made movement of any sort next to impossible. Tanks and amphibian tractors were unable to operate. Even the problem of supply from the rear was acute as the roads were washed out, one by one. Evacuation of the wounded developed into a nightmare. Supplying artillery ammunition was becoming one of the major worries. Laborious hand-carry was the rule for small arms ammunition, food and water to front-line units.

In a previous article, the surprise movement of the First Marine Division to outflank and capture Shuri Castle was described. This put us behind the enemy's holding forces and made their destruction inevitable and swift. That our men were able to move at all in that mud was a miracle. That they should have been able to assault a naturally strong hill position under the conditions prevailing was so incredible that the enemy had made no provision against it. He was caught entirely off base, and the collapse of his remaining Shuri line garrison followed rapidly. This was the situation at the end of May.

Under the conditions of terrain and weather then prevailing, a *rapid* pursuit was not possible. But a pursuit was commenced immediately and slogged its way slowly southward in spite of the mud. It became necessary to supply entirely by air drop. Evacuation of a single casualty was by hand carry, of such distance and difficulty that it occupied eight men for several hours.

BUT the drive still kept on. Enemy resistance along the front of the 1stMarDiv consisted of relatively small groups, of about company strength, and totaling about two battalions. These forces were deployed to defend every piece of high ground. Orthodox warfare again came into play during this period. Our patrols found them and

felt them out. Pressure was then put on frontally while the real attack came around a flank or took them in rear. In spite of the mud, it was refreshing to be able to maneuver again, even on a modest scale.

Upon reaching the line of the Kokuba River it was decided again to give the 1stMarDiv a frontage held by the 6thMarDiv. This decision enabled the Sixth to attack the Oroku Peninsula by a shore-to-shore attack. The 1stMarDiv was now attacking on the entire Corps front from the head of Naha Harbor to Route No. 5 which went generally southward from Shuri to Iwa. The zone then broadened out to the China Sea beyond Oroku Peninsula in a southwesterly direction and finally turned south again.

The 96th Infantry Division on our left was well ahead when we finally got going on the new frontage. Thus our left flank was secure. The hill mass at the base of the Oroku Peninsula, culminating in Hill 108, was the dominating terrain, and it was on our right flank. A good air strike was put on 108 and the Seventh Marines took it by assault next day. This opened the way to the China Sea.

The same day Berger's battalion of the Seventh reached the water's edge, at a point where the Japs had commenced to skin off an airstrip. We named the area "Berger's Beach." This move cut the Jap forces in two, isolating the Oroku garrison. It also enabled us to run supplies in by sea, and eventually



Even the tanks and tractors bogged down.



Land routes were impassable and it became necessary to supply entirely by air.

ally to shuttle hospital cub planes in to take out our wounded. The 22d Marines, which had been ordered in on our right to cover the gap made by our southward advance, arrived at the sea shortly after the leading elements of the Seventh. Our north flank was now secure, we had a supply and evacuation line, our right flank was on the sea, and the movement southward was resumed.

Before us lay two general lines of heights which contained the enemy's outpost belt of resistance. The first was a line of hills running generally northeast to southwest through Zawa. These outposts were beaten back without much trouble. When we came to the secondary line, however, the going got tougher. The hill north of Tera and those around Ozato required coordinated attacks and often consumed days. When we had taken them and attempted to advance against the Kunishi Ridge, east of Itoman, we knew we had once again hit the main defenses.

AGAIN, as it was before Shuri, we had the ridge-draw-ridge formation perpendicular to our line of attack. Again the dominating high ground lay to the eastward in the zone of the XXIV Corps. However, being on the flank, and our targets exposed to enfilade fire from the ships, we had an advantage in both fire and maneuver which we did not possess on the former position.

The draw between Tera and Kunishi Ridge was as well defended and as troublesome as the Wana Draw. But we took Hill 69, just northwest of Ozato; this gave us a good base of fire for the reduction of the draw, as it stood on a commanding height by the head of it.

The First Marines fought for two days, sometimes hand to hand, before we could secure this position. Tank-infantry teams then began the reduction process against the sides of the draw. However, the rocky cliffs of Kunishi Ridge resisted everything we had. Besides, the 96th Division on our left, faced with the vertical cliffs of Hill 167, was having trouble to keep abreast. The town of Ozato was heavily mined, and they took some losses in attempting to gain a foothold.

Thus the enemy had beautiful observation from

our left. He had many 47-mm and other guns which caused us severe tank losses. All attempts to get to the enemy's flank and rear via Itoman town, which we captured, proved unsuccessful. The Mezado Ridge, just beyond Kunishi Ridge, dominated these approaches completely.

After several days of processing the Kunishi Ridge by fire, the CO, Seventh Marines, who had the right of the Division line, said he'd like to try to take the ridge by a night assault. Once again fortune favored us. The night assault was a complete surprise, and the two companies that made it gained the precarious foothold on top of Kunishi Ridge with hardly a shot being fired.

The following night, at a different hour, the remainder of the two assault battalions pushed over into the hill to reinforce their comrades and make the position more secure. A company of the assault battalion of the First Marines was likewise advanced across the deadly draw and into the hillside by night with a minimum of loss. The situation was one of those tactical oddities of this peculiar warfare. We were *on* the ridge. The Japs were *in* it, both on the forward and the reverse slopes. Movement of any sort by us during the day met with severe fire, so that we had to resort to air drop to get food, water and ammunition to the men on the ridge. Tanks evacuated the more seriously wounded. Meantime the process of cleaning out the ridge went on, with the disadvantage of having enemy observation and fire power on our east flank where the 96th was unable to close the gap.

A particularly difficult pocket was called "The Pinnacle." It was a strongpoint so situated that none of our abundant fire power could be brought to bear upon it, and so inaccessible that infantry tried all points of the compass for a way to get at the defenders. It lay near the highest rocky point of Kunishi Ridge, between the elements of our assault regiments on the ridge itself. Its seizure occupied several days and, even after it was taken, the single sniper who remained shot two officers and 22 marines from his well-concealed haven before we got him.

The reduction of Kunishi Ridge was followed

1ST REG-1ST MAR DIV TOOK OVER LINES
AT THIS POINT FROM 27TH ARMY DIV.
26 APRIL, 1945

6TH MAR DIV TOOK OVER LINES
AT THIS POINT 8 MAY 1945

6TH MAR DIV AMPH
LANDING-4 JUNE

AWACHA POCKET REDUCED 4 M.
DAKESHI TAKEN 12 MAY
WANA RIDGE REDUCED 18 MAY
SHURI CASTLE TAKEN 29 MAY
HILL 107 TAKEN 4 JUNE
HILL 108 TAKEN 7 JUNE

1ST MAR DIV REACHES
COAST 7 JUNE
SPLITTING JAP FORCES

KUNISHI RIDGE
TAKEN 12 JUNE

1ST MAR DIV REACHES COAST 20 JUNE
SPLITTING FINAL JAP DEFENSES

1ST MAR DIV SECURED
Z OF A JUNE 21, 1945

SCALE OF MILES



W. O. D. M. A. S.

by a slight advance of our lines, the right reaching a portion of the forward slopes of the Mezado Ridge. The 6thMarDiv came up that night and relieved Berger's battalion of the Seventh Marines with a unit of the 22d Marines. These troops continued the advance next day, until most of the Kunishi-Mezado positions were overrun. Hill 69, just east of Mezado, was secured by the 1stMarDiv. The Seventh Marines was relieved on that position by the Eighth Marines (of the 2dMarDiv), now attached to the 1stMarDiv. The dispositions at this time, 18 June 1945, were approximately these:

The Fifth Marines was on the left, the Eighth Marines on the right, in assault. The Seventh was in reserve, partly on Kunishi Ridge and partly at Tera. The First Marines was in Corps reserve. The two assault regiments each had a battalion front, with great depth adding power to their punch. The Eighth was fresh and at full strength.

OUR 6thMar Div was able to advance rapidly on our right; while the 96th Infantry Division on our left was still held up short of Kunishi Ridge. This situation made it essential that we face more or less to the east along our left and extend this flank to the rear to cover the advance of our right. Accordingly, a battalion of the Fifth remained at Kunishi, while another one, Shelburne's (the one that took Shuri Castle), was brought around to Hill 69 from which it attacked Hill 79 to the east.

Hill 79 was needed as a base of fire from which to assault still another hill, Hill 81, which stood on the edge of our boundary and at the north end of a series of hills forming a ridge, and known to be defended. The plan, then, was to have the Eighth Marines make the main effort on our right, going straight south to the sea, which would cut the enemy in two once more, while the Fifth covered its rapid advance by seizing the successive hill positions along our left.

Both Hills 79 and 81 proved to be well defended, with numerous caves, with artillery support and with enemy observation from the heights in the XXIV Corps Zone of Action. Capture of these hills required tanks and flame throwers, and consumed several days. Therefore it was decided that the advance south should proceed while these hill positions were still under assault. A battalion of the Seventh was brought up to Kunishi on the left of the Division line, relieving the 2d Bn of the Fifth Marines which was leapfrogged through the 1st Bn to assault Makabe Town and Hill 81. Simultaneously, the 1st Bn went on with its reduction of Hill 79. The 3d Bn of the Fifth was swiftly moved through the Z of A of the Eighth Marines and swept down to join them on the Komesu Ridge, last feasible position which the enemy could use for defense in our advance to the sea. This ridge offered only minor resistance, and Col Wallace's Eighth Marines, followed quickly by Hill's bn of the Fifth, drove on to the objective, reaching the ocean 19 June. These troops then refused their right flank to join up with the 6thMarDiv, which was some 800 yards short of the sea that night.

This resulted in a curious formation. We held about 1000 yards of flank on our right, about 4000 yards of front on our left, and only about 1500 yards on the ocean front. The depth of our formation, which was that of battalions in column, permitted us to secure for the night without much danger of an enemy breakthrough. The 1stMar Div's drive to the sea resulted once more in cutting the enemy in two. Resistance now was divided, one group opposing the 6thMarDiv in the southwestern portion of the island, and the other opposing the XXIV Corps in the southeast. While the reduction of these areas took some time, the Commanding General, Ryukyu Forces, LtGen Roy S. Geiger, declared organized opposition at an end on 22 June, after 82 days of fighting.



Cub planes shuttled casualties to the rear.



Roads were used for emergency takeoffs.

Jap Tactics on Okinawa

Knowing that he had no offensive capabilities, the Jap commanding general shrewdly waged a stubborn war of attrition that was aided by strong natural defenses.

By LtCol Thomas E. Williams

LIETE NANT General Ushijima Mitsuru was the outstanding Japanese general encountered in the Pacific war.

I make this bold flat statement of fact with no expectation of challenge from anyone possessing an intimate knowledge of his defense of Okinawa. I will not waste words comparing his ability with that of other Japanese generals, such as Yamashita, whose performances in combat are a matter of official record.

In retrospect, it becomes apparent that General Ushijima, Commanding General of the Japanese 32d Army, expecting our attack, made a careful estimate of the situation and arrived at the following conclusions:

1. The most vital area which he had to defend was that lying south of the Ishikawa Isthmus. In this area fell all the airfields on the island, the best anchorages, the centers of shipping and all available supplies.
2. That the best beaches for a hostile landing existed in the area south of the line from Machinato airfield on the west to Yonabaru on the east.
3. That with the loss of the Ninth Division, adequate troops were not available to defend the area lying north of the Machinato-Yonabaru line, although positions had been prepared throughout the island.
4. That the terrain lying south of the Ishikawa Isthmus was well suited for strongpoint type of defense. His chief of staff, LtGen Cho Isamu, having studied these tactics with the Russians, had made great strides in their further development. It was proved in other amphibious operations where U. S. marines had forced a landing on strongly defended beaches that a defense based on strong beach defenses could not withstand assault by a determined enemy. As with the trench type defense, once this beach type of defense is cracked it is impossible to execute an orderly withdrawal to successive positions and continue waging an organized defensive fight.
5. That a strong mobile reserve would be necessary to meet any attempted landing south of the Naha-Yonabaru line.

With these conclusions before him, Ushijima made his decision: to defend the area south of a line from Machinato to Yonabaru in strength, to lightly defend the most likely landing beaches and to withhold a large mobile reserve.

Upon receiving intelligence in February that Okinawa was to be attacked with seven U. S. infantry

divisions and supporting arms, Ushijima realized the forces at his disposal could hold the area he had chosen to defend for several months, but that he had no offensive capabilities. He also realized that reinforcement by water was impossible, so he determined to wage a battle of attrition.

TO place his decision into effect, General Ushijima formulated the following plan: To reconstitute the Udo Force with local conscriptees (Boeitai), assign Colonel Udo the task of defending Motobu Peninsula and its sub-base at Unten Ko with his force of approximately 1500 men and be prepared to reinforce the garrison on Ie Shima on order.

Yontan airfield forces were reinforced with a battalion and given the mission of defending the airfield.

The 62d Division, the 24th Division, the 27th Tank Regiment, plus artillery units, made up the bulk of the forces assigned the final defensive (Naha-Shuri) area. The remainder of the 44th Independent Mixed Brigade, including the 15th Independent Mixed Regiment, was retained by Ushijima as a mobile reserve in the vicinity of Chinen Peninsula, while the defense of Oroku Peninsula was made the responsibility of the Okinawa Area Naval Base Forces under Rear Admiral Ota.

The above plans were executed and units were in their assigned areas when U. S. forces attacked Kerama Rhetto and seized Sand Island off the southwest coast of Okinawa. U. S. artillery was placed in position on Kerama Rhetto prior to L-day for Okinawa. General Ushijima, realizing that artillery placed on Sand Island could not effectively support a landing in the vicinity of Yontan airfield, moved all his effective combat troops, less the Udo Force, to his southern defensive area; this movement was completed the day prior to the main U. S. landings on the Hugushi Beaches (north of Machinato airfield). A large scale diversionary effort was made off the beaches on the southeast coast of Okinawa in conjunction with the main landings.

Ushijima moved his 62d Division to the line from Machinato to Yonabaru. An outpost line of resistance, occupying cave defenses, was placed from 2000 to 4000 yards south of the 62d Division's main line of resistance. When these outposts were driven in, Ushijima strengthened his line, reducing the frontage assigned to the 62d Division by moving the 24th Division into the right (east) half of his MLR.

It soon became apparent that the defensive positions utilized by Ushijima were unique. True, ma-

Marines have encountered Japanese fighting from caves, but no cave-type defense comparable to that found on Okinawa has ever been reported. As previously stated, LtGen Cho was an exponent of the strongpoint type of static defense, a concept he elaborated on by designing caves which could be used in either an active or static defense, which were not as vulnerable to artillery fire and aerial bombing as concrete pillboxes, which needed little artificial camouflage, which were not wholly discernible by air photo interpretation, which offered occupants refuge from flamethrowers, which made maximum use of favorable terrain, which could not be taken by frontal assault and which provided adequate living quarters for personnel.

TO properly understand the defense of Okinawa, one must first have a complete picture of the cave-type defense employed.

As a result of the experience in the Marshalls and Marianas, the Chief of the Japanese General Staff decided to abandon the log-type pillbox in favor of one which would afford protection against naval gunfire, artillery and air bombing. Therefore, in August 1944, the Japanese on Okinawa began building cave defenses under the direct supervision of LtGen Cho.

The construction of those caves which were to be occupied as defensive positions was usually accomplished in the following manner. The overall design of the positions to be exploited was set forth by the defense sector CO. Thereafter, a subordinate unit (for example, a battalion) would be ordered to set up a cave-type defense on a certain hill or hill area. Arriving on the ground, the battalion CO, after conferring with COs of adjacent units, would assign sectors of responsibility and would order his company COs to establish a cave-type defense on the hill. He would hold remaining units in reserve, assigning them the duty of setting up an AA defense. The company COs, after conferring together, would select positions and cave sets, taking into consideration terrain, ease of construction, the general cave network and the necessity for mutually supporting fire.

Actual construction of the caves was accomplished by the troops on the ground, attached labor personnel, Boeitai (home guards) and by quotas of Okinawan villagers conscripted on a day-to-day basis. On occasion, engineer troops were also used. The caves proper consisted of a cross-network of tunnels, with exits on both the forward and the reverse slopes of the hill, and also on the flanks. It was required that facilities for quartering all the troops manning the hill's defense, including sleeping quarters, cooking facilities, latrines, etc., should be installed. These facilities were sometimes provided in one large room, but were usually installed in several smaller ones, strategically located. Machine-gun positions were built into small rooms off tunnels paralleling the slope of the hill, and rifle

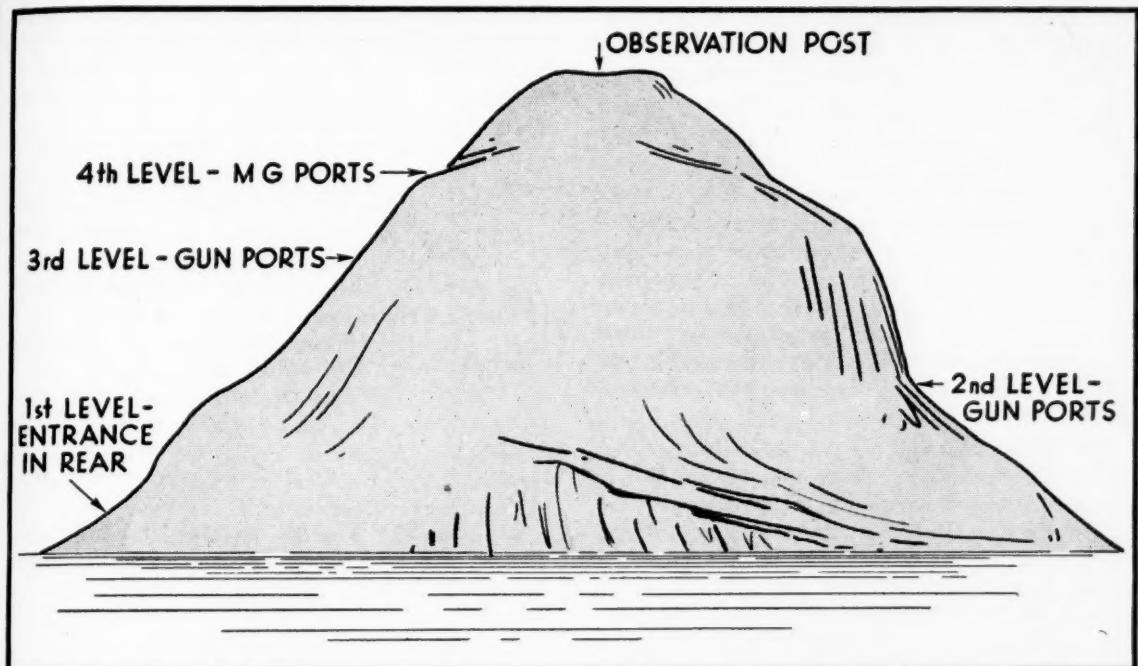
slits were also built into the hill so that rifle fire could be maintained from cave passages. Outside of the caves, octopus-type foxholes were dug in order to defend the mouth of the caves, and to enable riflemen to carry out their primary fire missions. If a unit possessed five automatic weapons, at least two would be emplaced so that each had a fixed field of fire of 30 degrees, mutually intersecting to create an interlocking bank of fire. The other automatic weapons were used to fire at targets of opportunity, or were emplaced in such a manner that they might cover weak points in the unit defense. All automatic weapons not firing from inside the hill were to have a primary firing position and two alternate firing positions, and the usual procedure was to shift positions at an interval of about one hour. Communications trenches led from all positions on the surface of the hill to cave entrances.

In regard to the tactical use of cave-type defense, the SOP is to keep one-third or more of the unit out of the cave on the forward slope of the hill, and to keep the remainder in the cave in reserve. At a time when enemy artillery, naval gunfire or air strikes are registering on the unit area, the soldiers manning the positions outside pull back into the cave, leaving 10 or 12 men as lookouts for each company. When the enemy infantry starts its advance, or is close at hand, the positions are again fully manned. During the early stages of the campaign, only two or three lookouts were left outside the cave positions during an artillery bombardment, but this number was insufficient to prevent the enemy from over-running the cave positions. When a fire fight occurs and it is necessary to reinforce the units on the forward slope, reinforcements are never sent out of the exits on the forward slope. Instead, they are sent out of exits on the left and right flanks, and to the rear, enabling them to circle around the sides and rear of the hill and deliver flanking fire, and to assume more advantageous positions. By using a side exit, reinforcements can also be sent from the units on one hill to a hard pressed garrison on an adjacent hill position.

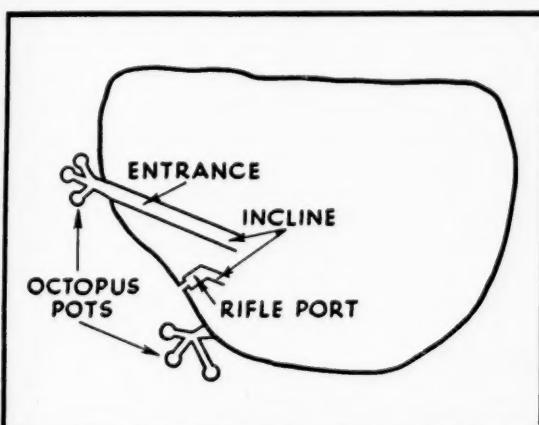
FINALLY, in case it is necessary to retreat, cave exits on the reverse slope can be used while fire from the cave positions on the forward slope covers the withdrawal.

To sum up, the cave-type defense has the following characteristics:

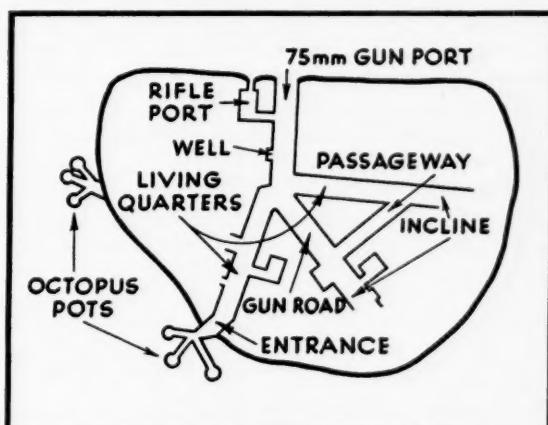
1. It affords all-around protection for infantry from naval gunfire, air strikes, and artillery fire.
2. It affords fire positions for small arms fire, automatic weapons and artillery.
3. It includes spaces for headquarters, command posts and barracks which are relatively safe.
4. It is a system of mutually supporting strongpoints.
5. It is a defense in depth, offering opportunities for withdrawal actions involving relatively small



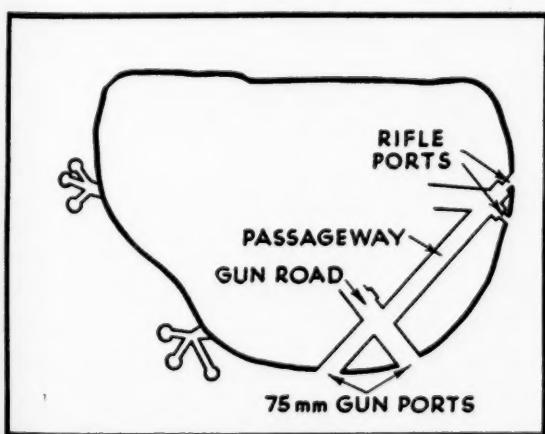
Typical hill-cave defense position as set up by subordinate Japanese unit on Okinawa.



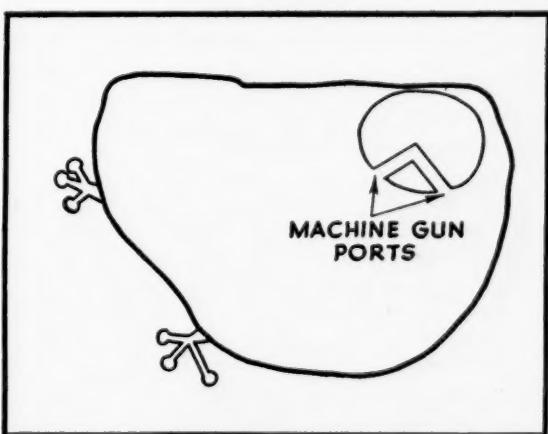
First Level Plan



Second Level Plan



Third Level Plan



Fourth Level Plan

casualties by utilizing reverse slope or flank exits.

6. It offers good cover and concealment for individual riflemen and automatic weapons.

Prior to the movement of the First Marine Division into the lines in the south, Ushijima had committed the 24th Division, which had been held in reserve, on a line from Shuri to Yonabaru, while the 62d Division held the sector from Shuri to the west coast. The 44th Independent Mixed Brigade was still kept in mobile reserve to meet any amphibious envelopment by the Sixth Marine Division, which was at that time the only combat unit remaining to the U. S. Tenth Army which had not been committed in the south.

With the commitment of the Sixth Marine Division on the right (west) flank of the Tenth Army, our intentions to continue a frontal assault were made evident to Ushijima. He immediately seized this opportunity to commit the 44th Independent Mixed Brigade and meet this new threat to his Naha-Shuri-Yonabaru line. He no longer was faced with the possibility of fighting on two fronts, and consequently it was no longer necessary to withhold a strong mobile reserve to meet that contingency. The situation at this time seemed made to order for Ushijima to conduct his war of attrition; his position was strong, he was in possession of the commanding ground, he had all of the benefits afforded a defender and his opponents were denied the customary benefits accorded the attacker, particularly maneuver and surprise.

There was one weakness to the Naha-Shuri-Yonabaru line in the form of a natural corridor leading into the Shuri hill mass from the west. This corridor,

although not apparent initially to the attacker, was the source of some concern to Ushijima. If the Sixth Marine Division captured the hill which guarded the entrance to this corridor and then attacked to the east, the Shuri hill mass would become untenable, having been enveloped from the west. This hill which guarded the corridor is now called Sugar Loaf Hill. When the Sixth Marine Division assaulted Sugar Loaf Hill, Ushijima committed all of his local reserves into the ensuing battle. On the night of 19 May, when it seemed that the attacker had lost his momentum, Ushijima executed a night attack with approximately one battalion, including 300 naval troops who had been brought up under cover of darkness from Oroku Peninsula. To every commander the commitment of his last reserve spells either victory or defeat. So it was with Ushijima. He counterattacked what he thought was a battle-weary, casualty-depleted regiment, but instead he encountered the Fourth Marines, who had been brought from division reserve and sent in to replace the 29th Marines in the afternoon of 19 May.

Ushijima's Naha-Shuri-Yonabaru line was becoming untenable. Unlike most Japanese generals encountered heretofore, he did not order a hopeless banzai attack. On May 20, withdrawal warning orders were issued to all Japanese unit commanders.

The Japanese 32d Army had successfully executed an orderly withdrawal to the southern end of the island by 27 May. They continued to wage their battle of attrition. With his forces depleted to the extent that no attack potential remained to him, his supplies exhausted, his back to the ocean, Ushijima joined his honorable ancestors in the traditional bushido manner by formal hara-kiri.

Ushijima had made his last decision.

Inspection Division Formed

FORMATION of a new division at Marine Corps Headquarters to be known as the Inspection Division is announced by General A. A. Vandegrift, Commandant of the Marine Corps.

This new division will be headed by MajGen Pedro A. del Valle as "Inspector General, Marine Corps." General del Valle commanded the First Marine Division during the capture of Okinawa. He had previously served as an artillery regiment commander in the battle of Guadalcanal and later as a brigadier general, commanding artillery of the III Amphibious Corps during the capture of Guam.

One of his assistants (more will be assigned at a later date) is Col Alan Shapley, commanding officer of the Fourth Marine Regiment on Okinawa.

The purpose of the Inspection Division is to assist the Commandant in all matters which affect the efficiency and economy of the Marine Corps by assisting commanders and other members and employees of the Corps in the performance of their duties, and to make regular inspections, investigations and reports as may be directed by the Commandant.

The sphere of this division, pending further instructions, includes all Marine Corps commands, posts and stations, including those under the Department of the Pacific, and aviation activities, with the exception of Fleet Marine Corps units beyond the continental limits of the United States and units afloat.

Training Policy for Peacetime

WITHIN 48 hours after the formal announcement of the surrender of Japan, Headquarters Marine Corps was well along in the matter of conversion to a peacetime training policy.

The measures immediately put into operation, initiating this conversion, involved disbandment of the Infantry Training Regiments at the Training Commands, with the consequent curtailment of all Phase II and III infantry training. These initial changes were made so a greater number of recruits could be made immediately available for shipment overseas, permitting those marines now in the field, and eligible for release from active duty, to be more quickly returned to the United States.

Advanced infantry training will now be conducted in the units to which recruits are assigned—the normal peacetime procedure.

Marines being transferred to FMF units will continue to receive certain advance infantry training at the Staging Regiment, San Diego Area. The length of this training will vary, however, due to the very temporary status of replacement drafts awaiting shipment at this point.

The period and intensity of recruit training is not being changed at present. However, the policy of disposition of recruits completing that training has been modified. Inductees under 19 years of age are later assigned to continental posts and stations, there to complete the required total of six months' training prior to shipment overseas. Volunteers, and inductees 19 years of age or older, are transferred on completion of "boot" training to the Staging Regiment on the West Coast and assigned to a replacement draft. Recruits for Sea School are assigned there immediately after recruit training. Disposition of recruits who are to undergo specialist training of any nature is made according to directives from Headquarters Marine Corps.

Among the Training Command units, additional changes have been made due to newly decreased requirements for certain types of replacement personnel, as well as necessary release of instructor personnel there for replacing overseas veterans. At Camp Lejeune, the Schools Regiment has been disbanded as such, certain remaining units being placed under jurisdiction of other Training Command organizations. The Japanese Language School, Cooks and Bakers School, and Combat Intelligence School have all been transferred to the Specialist Training Regiment. The Officers' Antiaircraft Battalion, Chemical Warfare School, Troop Officers' Battalion and Troop NCO Battalion have been, or shortly will be, disbanded. The number of students for the Officer Applicants' Battalion is being decreased.

At Camp Pendleton, as at Camp Lejeune, the Infantry Training Regiment has been disbanded. In addition, the Troop Leaders' Battalion and Artillery Demonstration Battery have been disbanded. Quotas of students and lengths of courses at both training agencies are being determined for the entire period of transition to peacetime training.

Directives have been issued from the Commandant relative to changes in four principal officers' courses at the Marine Corps Schools—Platoon Commanders' School, Administrative School, Air-Infantry School, and Command and Staff School.

The Platoon Commanders' School will continue as now organized until graduation of the 17th Platoon Commanders' School class on 19 December. On activation of the First Basic School Class, around 3 October, the name of the school will become "The Basic School," and will constitute the principal course of instruction for all newly commissioned officers. Basic School classes will be of six months' duration until the ultimate nine-month schedule commences (tentatively 1 Sept 47).

The Administrative School has been activated at the Marine Corps Schools to train sufficient personnel officers to meet Marine Corps needs. This course, now of eight weeks' duration, will be combined with the Basic School Course about June 1947, when the length of this latter course becomes sufficient to include proper instruction in administration.

It is planned that the pre-war system of summertime Platoon Leaders' classes will be resumed at Quantico, probably in July 1947. Officer candidates, selected from a number of civilian colleges, would attend three of these yearly classes prior to receiving a reserve or regular commission. Honor graduates of the Platoon Leaders' Class who receive regular commissions would enter Basic School after graduation from College, while those receiving reserve commissions would remain on inactive duty.

The Marine Air-Infantry School will continue indefinitely, being modified somewhat during the transitional period. The mission will remain the same—that of indoctrinating company grade Marine officers in the conduct of air-amphibious operations, and affording refresher training on infantry subjects. The present course of 13 weeks will be gradually expanded to nine months, and quotas are planned to increase from 100 to 200 per yearly class.

The Command and Staff School, the highest course of instruction afforded by the Marine Corps to its officers, will be lengthened and even further refined. From the present 17-week course, this instruction will grow to the desirable 9-month course, established on a yearly basis. The number of students to be considered for this instruction is planned to reach approximately 75 per class, upon complete postwar stabilization. Additional plans include a summer class of the Command and Staff course for eligible reserve officers.

END

Engineers on Iwo

5thMarDiv engineers blasted roads and sealed caves by the thousands, helping troops to move forward over Iwo's out-of-this-world terrain.

Driving into the teeth of the Japanese,

By 1stLt Walker Y. Brooks

THE struggle for Iwo Jima, where 80,000 superbly trained troops fought a "no quarter" war of attrition on a pitifully small piece of Pacific terrain for 36 days, was characterized by anomalies in all phases of tactics employed by the assault forces of the V Amphibious Corps and all its component elements.

Iwo Jima, at the time it was invaded by the Third, Fourth and Fifth Marine Divisions, could boast of nothing beyond incomparable dawns and sunsets, two airfields, an extinct volcano and a wondrous labyrinth of underground cavern fortifications, plus the fanatical exploitation of these subterranean defenses by a well-trained and well-equipped Jap garrison.

During Iwo's conquest, LtCol C. H. Shuey's 5th Engineer Battalion could give little time to the sunsets, but Iwo's remaining natural endowments—Suribachi, the cave defenses and the weird terrain—were vital factors for consideration.

The story of the engineers of the Fifth Division at Iwo is a story of the aforementioned anomalous

use of men and equipment for battle tasks of every description and of adapting every available element from the soil and even the sea in the accomplishment of these tasks, of building roads, on occasion, ahead of the assault troops; of blasting, cutting, bulldozing and sealing; of struggling with heavy equipment across the mired beaches under artillery and mortar barrages; of road maintenance under enemy observation.

It's all part of the official record now. But it's an interesting story. It could be summed up in the words of one lad of the 27th Marines, temporarily pinned down on the beach, looking behind him and saying—"Here comes them engineers . . . now we can start movin'!"

Here's how, organizationally, administratively and actively, the engineers helped the troops do just what the kid said—move!

The 5th Engineer Battalion arrived at the target with the lettered companies attached to each combat team of the Fifth Marine Division, as follows: A Company with CT26, B Company with CT27, C



Engineers with armored bulldozers led the way through wellnigh impassable terrain.

Company with CT28. H&S Company remained under command of the battalion commander, who was controlled, as normally, by the division commander.

The heavy equipment and vehicles remained under lettered company control until D plus 10, at which time they were placed, together with operators, under direct control of the battalion commander, with each lettered company retaining one TD-14 angle dozer, one armored TD-18 tractor, and four 2½-ton dump trucks. The equipment was still physically retained by each lettered company—repairs, maintenance, personnel of this equipment remained under company control—but reverting the equipment to battalion operating direction enabled the commander to divert at any time the majority of equipment to support of the division's main effort. The plan proved highly successful.

THROUGHOUT the Iwo operation, the engineer company commanders became familiar figures to assault troops on the line. The presence of engineers was always a comforting sign; they represented a means of blasting routes through seemingly impassable terrain; they were an assurance that bypassed Jap caves would be blasted shut, thereby denying their further use to the enemy as rearguard threats to our advance.

Although in the line during the day, each company commander checked in at the battalion CP late each afternoon, when reports were made on the engineer situation in their respective zones of action, and the next day's operations were planned with the staff.

Here are some interesting statistics, in round figures, on the quantities of explosives expended on Iwo by the 5th Engineer Battalion:

2,500 bangalores
123,000 lbs C-2 explosive
35,000 lbs TNT
157,000 feet of blasting fuse
600 shape charges, M2A1
500 shape charges, T-3

A Japanese POW told the marine interrogator the Nip garrison had been told by their officers that the Americans would never try to take Iwo, chief among the reasons being the island's deplorable water supply. It is a commentary on the difference between Jap engineering efficiency and our own that on barren Iwo, water supply was never a problem (see *Water on Iwo*, page 52).

The work of the combat engineers of the Fifth Division on Iwo was a constant struggle against the unbelievably rugged and weird terrain, made more unorthodox by the unrelenting tactical use of this terrain by the enemy. The 5th Engineers were always adapting both equipment and personnel to meet the exigencies that arose.

Demolition work by the engineers was an example of this. Very few strictly engineering demolition projects were encountered, but 5,000 caves and pill-

boxes were destroyed by the engineers in the 5th MarDiv zone of action. Enemy cave demolition was tough, dirty and dangerous work. Initially in the operation, specially trained infantry troops accomplished demolition missions, but the murderous frontal assault nature of the conflict soon depleted this personnel and the only alternative was the engineers. The black and yawning mouth of any open cave remained a potential source of Jap machine-gun and mortar fire. The underground defenses were such a maze of intercommunicating passageways and tunnels that enemy infantry, when driven into one cave, would reappear above ground, fighting from another cave.

As many as 1,000 caves and underground entrances were blasted shut on Mt. Suribachi alone!

One extraordinarily heavy blockhouse encountered in the gorge in the north of the island, where the last pocket of enemy resistance held out, set some sort of a record in the placing of heavy charges. This structure, which was finally revealed to house the island's main radio and communication installation, had for days withstood naval gunfire, artillery, and point-blank 75s from tanks, without a sign of breaching.

Demolishing this structure became the especial pride and joy of Company A of the 5th Engineers. Construction figures released later showed, like those on all the rest of the Jap defenses on Iwo Jima, the result of careful planning and painstaking labor on the part of LtGen Kuribayashi's construction battalions. The structure was an earth-covered, concrete emplacement four feet thick, the concrete containing reinforcing stone not native to Iwo. The concrete was further reinforced with a mesh of steel rods one inch in diameter and set six inches apart. The overall size of the entire emplacement was estimated to have been 25x40 feet, but when Company A went to work, direct hits by constant shelling with everything we could throw at it had reduced and chipped the building down to approximate dimensions of 15x35 feet. In spite of such terrific mauling, the structure was still intact, still contained its vital equipment unharmed, and still gave evidence of actual enemy troop activity in and around it!

ON D plus 34 the building had been sufficiently isolated from outside enemy interference that Company A engineers were able to drive right up to the building with a truckload of explosives and methodically go to work to deliver the K.O. punch. As it turned out, more than one punch was required.

At 0745, with all troops in the area warned of the charges to be set, and the nearest marines taking cover at about 350 yards, the first charge of 3,100 pounds of C-2 explosive was set off on the roof of the blockhouse. (C-2 has about 25 per cent higher explosive power than TNT.) This tremen-

dous charge blew a hole in the roof about ten feet in diameter.

Several of the engineers then ventured through the opening down into the building. They found themselves at one end of a large chamber, cluttered with radio transmitter gear. And, despite the terrific concussion of the recent explosive, they also found themselves in the presence of the enemy! Inconceivable though it seems, enemy rifle fire rang out from the subterranean tunnels leading off the main chamber. The marines scrambled out again!

With such evident tenacity on the part of the Japs within, the engineers decided the blockhouse hadn't been softened up enough. The next charge, set off at 0930, consisted of 3,000 pounds of TNT, stacked in cases further down the roof. This explosion blew another hole in the roof, somewhat smaller than the first but contributing to the general effect.

At 1130 the engineers, not being content with the results thus far, gathered up all the remaining ban-galore torpedoes in the area, equalling about another ton of TNT, and stacked them like cordwood on the section of roof still intact. After this third explosion they were ready for another look inside. Before doing so, however, a pair of infantry flame-throwers worked over the structure and a flame-throwing tank rumbled up, stuck its blunt nose against the openings and let go with a few lethal squirts.

By this time an examination of the interior revealed a gratifying amount of rubble and, strangely enough, the corpse of a Jap soldier stretched out on a table with arms folded across his chest, the whole effect somewhat reminiscent of "Beau Geste."

After removing all available gear for Intelligence examination the ruins were covered up by bulldozers, and it was "mission accomplished" for the engineers.

Road construction by the engineers on Iwo had three phases: (1) building of exit roads from unloading beaches to high ground, and connecting these exits with main north and south routes; (2) pushing main roads south to Mt. Suribachi and north to supply front line demands; (3) bulldozing of roads or trails for movement of low-bellied tanks in the wild terrain to the north.

Road construction equipment and operators of the lettered companies worked out of their company headquarters under control of engineer battalion headquarters. This differed from the rest of the engineer operations in which each lettered company was attached to a combat team.

Both initial and final phases of this work required almost superhuman effort by engineers to overcome both man-made and natural obstacles. First of all, bear in mind the picture of Iwo's out-of-this-world terrain. In the southern landing sector the beaches sloped upward by terraces to the high ridge running north and south in the island's center, forming its backbone. These beach terraces

were composed of a coarse, black volcanic sand or ash, of such loose texture that even in walking a man would sink ankle deep in it. Almost all wheeled equipment had to be assisted by tractor to the tops of the terraces until pierced plank could be laid.

Every passing minute after H-hour added to the congestion of the landing beaches with masses of equipment and materiel needed by the assault forces engaged with the enemy a scant few thousand yards off the beaches. And yet in spite of herculean efforts, progress in building these beach exits was agonizingly slow, accomplished in the face of murderous artillery and mortar fire which day and night methodically crashed into the massed men and equipment from hidden Jap guns to the north.

After A and B companies dozed three exit trails from the beach, tying these exits in with a lateral road along the top of the rising ground and connecting this network into existing inland trails, the progress was somewhat easier. But the hazard was intensified.

ON the higher ground the sand was more easily worked, and it was found that approximately 1,000 yards of 30-foot roadway could be dozed and brought to grade in one day, using three bulldozers and one grader. Sand compaction on the most level areas was fair, and wheeled traffic was able to use the roads before surfacing.

The existing Jap roads encountered and used in the main network were narrow, six- to eight-foot routes built of hand-hewn volcanic rock on a volcanic dust base. These roads were badly cratered and were improved by extending one side to the required width and then stabilizing in the same manner as new roads.

The Japs had carefully registered their artillery and mortars on existing roads, road crossings, and road junctions. Engineer crews often received accurate Jap fire when improving existing roads in areas 1,000 yards or more behind the front lines. Officer-reconnaissance revealed that new roads could be pushed over unbroken terrain to within a few hundred yards of the foremost positions without receiving anything but small arms fire.

Road maintenance got under way even before all front line roads were finished. Constant maintenance by three motor patrols of the lettered companies, plus an H&S Company distributor and a sprinkler improvised from a converted amphibious trailer towed by a 6x6 dump truck, accomplished the job.

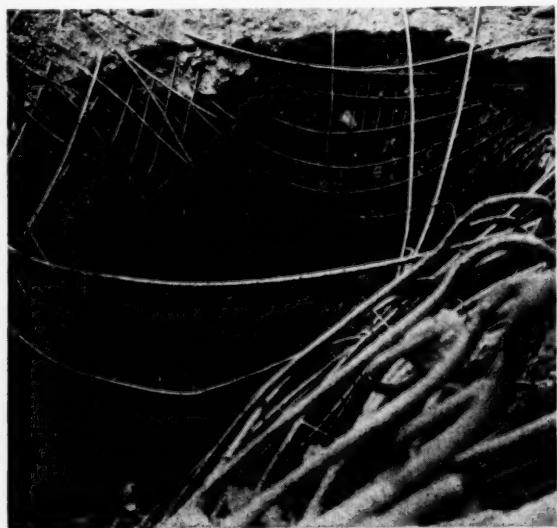
The final phase of road building was reached as we encountered the final defensive position of the enemy in the extreme north of the island. By this time Japanese antitank guns had been knocked out and the enemy's defense was built around excellent exploitation of the rocks and crags and deceptive use of the extremely broken, rocky country where the enemy could use small groups of men, firing



Demolishing this huge emplacement which withstood gunfire was task of engineers.



Flame was needed when Japs still held out after engineers set off ton of explosives.



Another blast finished the emplacement but even then shots were fired by Japs inside.

point-blank, and launch sudden, vicious assaults on our men and equipment.

This phase of the engineers' work on Iwo could well be called the "Saga of the Armored Dozers." Road-building in this sector was not so much the construction of supply routes as it was the bulldozing of tank roads or trails by TD-18 armored angledozers in front of front line positions to allow the low-slung tanks to negotiate the otherwise impassable terrain and get into positions from which they could bring guns and flame to bear on remaining enemy strongpoints.

The work performed by the engineer-operators of the armored bulldozers as they cut roads for the tanks was nothing short of heroic. The procedure called for the dozers to be followed by flamethrowing tanks, which in turn were covered by other tanks in the rear. Close coordination with this armor by foot troops enabled the marines to burn and dig the enemy out of their subterranean positions. But the bulldozers and tankdozers invariably led the way.

Existing Jap trails in this sector were systematically mined, and even new trails, when bulldozed during the day, had to be guarded at night. Otherwise dawn would find them mined by the Japs.

THE western beaches of Iwo Jima were more heavily mined than the eastern beaches. Single and double horned hemispherical mines, 63KG aircraft bombs laid on their sides with yardstick mines strapped along the longer axis, box mines and terracotta mines were used extensively on AT and AP missions. The hemispherical and conical types used on the beaches were easily detected by observing the exposed horns.

The best method of discovering enemy mines on Iwo was by observation and probing. The easiest method of disposal in open areas was to disarm and deposit mines in scattered dumps. The bomb-yardstick combinations were handled by disarming the yardstick mine and placing them in dumps. The bombs, which already had the fuses removed if heavy or clear of construction, were left for bomb disposal personnel, since special equipment was often necessary to lift and carry them.

More than 2,000 mines of all types were removed from Iwo's beaches and roads by the 5th Engineer Battalion. Information as to progress of the mine clearance squads was furnished to D-2 and D-3 daily by means of map overlays.

In summation—the fact that Iwo Jima became a milestone on the road to total conquest of the Japanese is a tribute to the troops who assaulted and captured it. It is also a tribute to the successful accomplishment of basic engineering feats in punching across difficult beaches, pushing roads into the teeth of the enemy, constantly overcoming terrain obstacles, and utilizing every available natural resource to back up the toughest of operations with men, equipment and engineering materiel. END

Water on Iwo

By **StfSgt Jack Vincent,**
Combat Correspondent

ON IWO there was water, water everywhere for marines, but hardly a drop to drink for Japs. Every marine of the Fourth Division took two canteens of water ashore, and not a day went by in the battle when he could not drink all he wanted.

Toward the end, when the thirsty Japs were sneaking into marine lines by night to try to steal water, the Fourth's supply had reached a surplus stage. Concussions from the air and sea bombardments which preceded the landing had cracked cemented sides of reservoirs, allowing the Jap's precious water supply to seep away.

The Japs had a few tank trucks like street sprinklers in American towns. These trucks had been in hand-hewn rock revetments on northern Iwo. Though they may have been intended primarily for fighting fires after air raids, their employment for water storage was prevented when they were riddled by shell and bomb fragments.

Reports that the Japs were desperate for water began reaching American lines as early as D+10. Marines then cursed the clouds, fearing rain would replenish the supply.

In contrast, the Fourth Division's water system was functioning so well that water hauling details were signing for cargoes. Chit signing was encouraging, because whenever an invasion gets that far along, it means the marines are in to stay.

Distillation units of the 4th Engineer Battalion went ashore from LSMs on D+5, and operated through some of Iwo's heaviest artillery, rocket and mortar shellings. Because their water source is the ocean, the units were set up between artillery emplacements and landing beaches, where ships unloaded—prime targets for Jap gunners.

Up until D+5, water was carried into the beaches from ships in five-gallon cans. Nearly every craft—amphibian tractors, Higgins boats and LSTs, met

water quotas which had been planned in advance. Had the distillation units been delayed in landing, there would have been no threat because ships offshore could have produced ample water. But it was easier to supply the expanding front from the beach.

By D+6, the first units, each capable of distilling 1500 gallons a day, were in operation. From then until D+10, the 4th Engineer Battalion, headed by LtCol Nelson K. Brown, produced an estimated 35,000 gallons. There was no checking system; the water was passed out to anyone who needed it.

On D+10, however, the situation had become stabilized, and signing for water was enforced so that priority could be given to front-line troops. From then until the island was secured, the units produced 338,375 gallons.

The thousands of gallons brought ashore in cans must be added to the distillation output to measure the total amount available. Water was hauled to the front every morning and night in trucks and jeep trailers.

At times, the engineer battalion had as many as 16 units operating, producing more than a gallon a day a man, and, on occasion, allowing a surplus for other outfits. Maintenance repaired serious breakdowns in from three to eight hours. There was an unusual amount of mineral content in the water off Iwo, and at some springs the water was a hot sulphur brine. Parts of the distillation engines became sealed with minerals and had to be overhauled.

The Jap had nothing comparable to our mobile waterworks. Some small and oftentimes crude Jap stills have been captured in the Pacific, but at best they could produce only enough water for a few, probably officers.

The Iwo Japs depended on rainfall for most, if not all, of their water. They dug and cemented cisterns 12 feet deep and from six to 10 feet square, flush with the ground. There were indications that the Japs had constructed their airports to let rainwater drain off runways to reservoirs.

Iwo was probably the most barren island ever invaded by such a large American force. There were no streams, and the few hot sulphur springs gave up water too brackish to drink.

On Saipan, besides sinking a few wells, the Japs had harnessed the island's one flowing stream. Marines captured that and turned it into the source of from 35,000 to 40,000 gallons of drinking water a day. There was nothing like that on Iwo.

Our engineers reported that there were enough storage cisterns on Iwo to meet Jap military needs. The cisterns had been scattered widely and shrewdly so that the Japs would have had water up until their final days. But they failed to figure on concussion. Even if reenforced with latticed steel, it was doubtful that the cisterns would have stood the pounding. Though similar concrete emplacements protected Jap troops, the sides were often too cracked to hold water.



Distillation units went ashore on D plus 5.

Japanese Landing Craft

We can learn a few

things from the Japs about the design of small craft and handling them on beaches. Theirs were simple and efficient, with some ingenious innovations.

By Col L. S. Swindler

Drawings by 1stSgt Harry D. Reeks and Sgt R. W. Whitney

OFFICERS of the "old" Marine Corps who served in China during the period of expansion of the Japanese Empire after World War I watched with great interest the development of amphibious warfare equipment by the Japanese army and navy. Little appeared during the early stages of expansion, as their penetration of Manchuria was not an amphibious operation. During this occupation, seagoing ships tied up to existing commercial wharves and discharged the soldiers and their equipment. Even the Japanese landings in the Shanghai area during the same period were made in ships' boats, just as, up to that time, our own marines had been landed since their original inception.

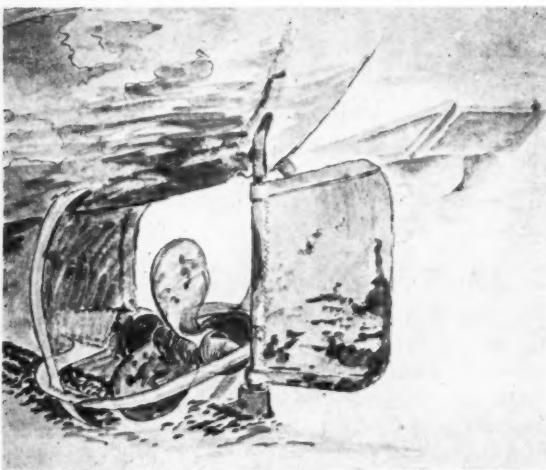
It is probable that Japanese interest in special landing craft was stimulated by our own experimentation, as they undoubtedly kept abreast of foreign developments with their usual meticulous espionage. It is a certainty that their plans for a rapid domination of East Asia made it imperative that they provide a vast quantity of landing craft. It was to be expected that any craft developed would be simple, but adequate. Their island-born population grew up in intimate contact with the sea, and their fish-

ing boats had been functionally developed for just the purpose required of amphibious landing craft. While they are essentially similar to our own landing craft, there are a number of features which are of more than passing interest to all marines. Comparisons with our own craft have not been published, but those familiar with our landing boats can make their own comparisons from the pictures accompanying this article.

The first time most of us saw any of their specially constructed landing boats was during the Japanese occupation of the Shanghai area in 1937. The general landing technique was the same as that employed in 1931, but after the beachhead was well established they shipped in a swarm of specialized landing boats for their inland penetration. The earlier models were essentially standard Japanese fishing boats built of wood but having a ramp bow. Later, steel was used in hull construction, but adequate timber fenders have been universally retained, and wood framing throughout is common. Most of them were powered with steam engines, a few with internal combustion engines, and approximately half were towed barges. These were extensively used in the Japanese advance up the river



Although badly damaged by pre-invasion naval barrages, large numbers of Jap landing boats found in two basins on Iwo Jima still could be examined for their structure.



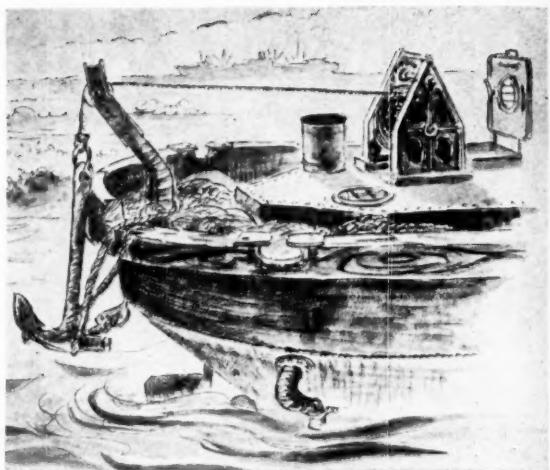
"Weedless" or anti-fouling propellers were found on a few of the Jap landing boats.

and back through the lake region above Shanghai.

Many examples of these small boats have been seen by marines in all the operations in the Pacific, and their construction is well known to all. The ones illustrated in this article were found on the beach at Iwo Jima. There was a small-boat repair basin at the northern end of the eastern beaches, protected by a small breakwater. There was a small marine railway where the boats could be hauled out for repair. An antiquated boiler under a flimsy shed furnished steam for the winches and for the meager shop facilities in the repair yard. At the time of the assault there were about a dozen landing boats in the basin and hauled up on the beach. They had been badly damaged by the terrific preparation fires, but it still was possible to examine their structure. On the opposite side of the island there was another repair point on the beach in the protecting lee of Kangoku Rocks. Half a dozen boats were on the beach here, and they were much less extensively damaged than the ones in the eastern boat basin. The only shore equipment in evidence was a winch powered by an American-made automobile engine.

There is no doubt that the design of these boats was excellent for amphibious landings under beach conditions in the Japanese islands. They are of the type used for centuries by fishermen who lived along the shores which we now are occupying. Their evolution was undoubtedly as much on the order of "survival of the fittest" as is true of the fishermen who built them. Their livelihood and their very existence depended on the efficiency of the boats from which they fished in the open seas around the islands on which they lived.

The development of seagoing ships for amphibious operations appears to have gone along concurrently with that of the smaller craft. The first example seen by the writer was a supply ship for landing operations. It was anchored in the Woo-



Stern design on one of the smaller boats shows anchor operated by auxiliary winch.

sung at Shanghai in 1938. It was of interest principally because of memories. It had not been built for the purpose, but was an old battleship converted to carry landing equipment. Efforts to verify its original name have so far been unsuccessful, but it was reported on good authority to have been originally H. I. J. M. S. *Mikasa*, which was Admiral Togo's flagship at the battle of Tsushima in the Russo-Japanese war. If it was not the *Mikasa*, it undoubtedly was of the same vintage. Years before, in 1919, the writer saw it in Vladivostok when it was the flagship of the Japanese forces in that port. At that time the Japs took delight in steaming up and down Amur Gulf in front of the city while the gun crews made dry runs by training their guns on the principal targets ashore. It was a typically Nipponese gesture of "friendliness" but was wholly unappreciated by the Russians.

The *Mikasa* was one of the warships to have been retired as a result of the Washington Conference, but the Japanese would have considered it a great waste to junk her completely. Labor they had in abundance and at a negligible cost, so the old fighter was stripped of guns and armor, large hatches were cut in her sides, and she became an auxiliary to carry landing equipment. She must have been an expensive piece of machinery to operate, but again, labor was cheap and there is no doubt that, if she is still afloat, she will be operated as long as her ancient boilers will hold a head of steam.

To us, the most interesting Japanese development was a ramp-bowed landing ship, good examples of which were found at Iwo Jima. Only the Navy can tell whether the Japs or ourselves pioneered this type. Certainly there is considerable similarity as well as wide variation between their LSTs and ours. One thing is very evident about the Japanese ships—they are not made by mass production methods. The overall design is the same, but the com-

ponent material and equipment varies in dimensions and could have been assembled only on an individual handmade basis. Some even appear to have been made from any material available in the building yard, as the steel sheets forming one deckhouse were of varying thickness according to no pattern or system.

Early photographs taken of the eastern beaches of Iwo Jima showed them clear of obstructions, but, as the island was bombed, wrecked ships appeared in later photographs. At the time of the assault there were nine small ships scattered along the eastern beaches; two luggers, a small destroyer type and, bunched together at the northern end of the beach, six LSTs. All were badly damaged, not only by the original bombings which caused them to be wrecked, but also by the heavy preparation fires and bombing at the time of the assault. It was apparent that one of them had been unloading tanks at the time it was bombed, as there still was one tank aboard after the ship broached. It still stood just inside the bow door. The sand had filled in around these ships so that it was easy to get aboard and examine them, and, although badly holed and totally wrecked inside, their general structure could be examined.

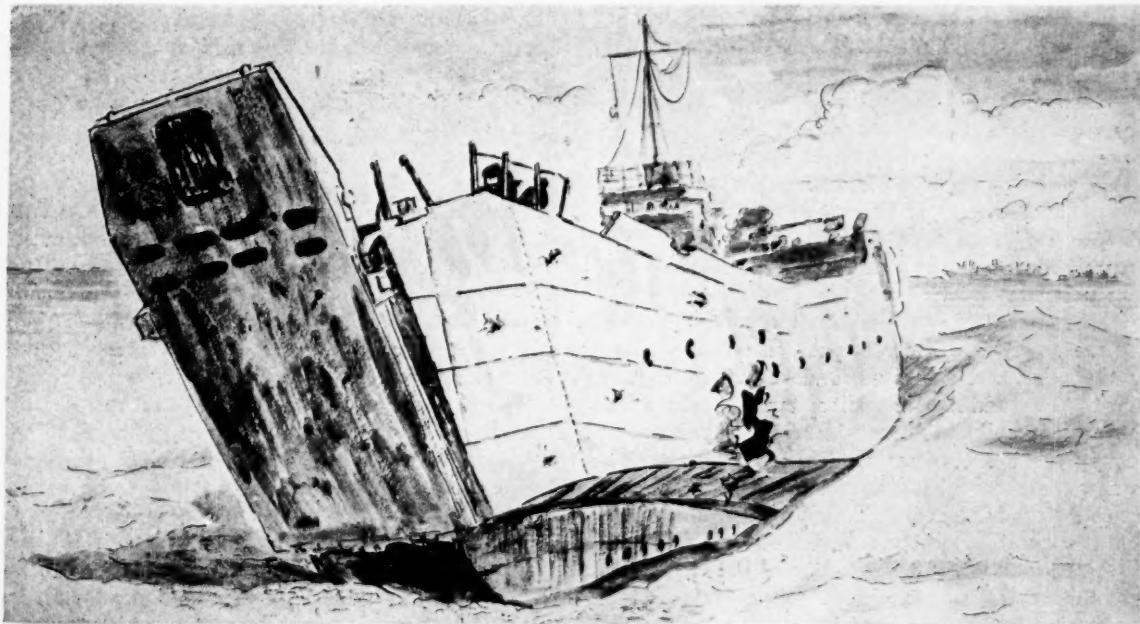
The Japanese LSTs are surprisingly well streamlined, and a good idea of their under-water design is presented by one of the accompanying drawings. The water line shows up clearly in these pictures, indicating a very shallow draft, due in part no doubt to the fact that they are actually rather small ships and do not displace a very large amount of water even when fully loaded. They will, therefore, navigate very shoal waters. The point of deepest



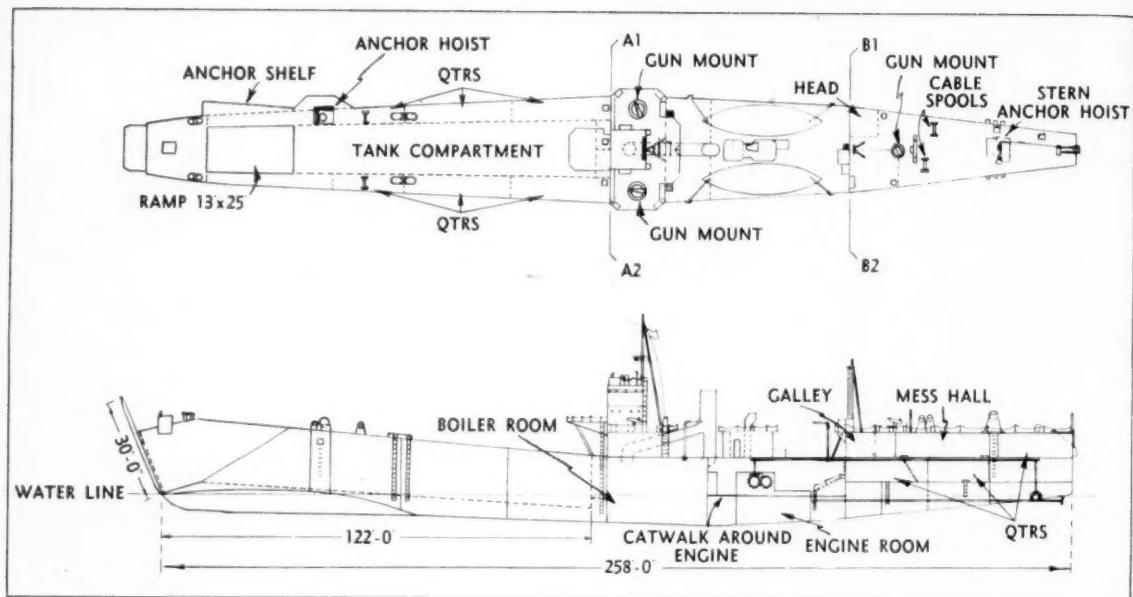
The anchor is drawn up into the stern slot of the Jap LST for easy shackling on cable.

draft is well aft and the forward portion lifts rapidly so that the ship rides with bows in a high position, barely awash, and the ramp can be driven well up the beach to facilitate a dry landing of the vehicles carried on board.

Of more than passing interest are the two false keels under the forward portion of the ship. They



False keels helped keep Jap LST firmly beached and also checked broaching by wave action. Large perforations in the keel allowed the water to flow in and out freely.



Plans and elevations of the ship give only the bare outline and major dimensions but trim lines are undoubtedly responsible for efficiency of small steam engines.

are welded up from sheet metal, are about six feet deep at the deepest point, and about two feet wide at the top. The purpose of these false keels is to keep the craft firmly beached so that it does not shift laterally due to the action of the surf. They also tend to prevent the ship from broaching after being firmly beached. Broaching normally occurs when the bows are against the beach and the ship is not absolutely perpendicular to the force of wave action. Under these conditions the surf acts against the quarter, pushing the stern around the bow as a pivot. The false keels tend to prevent this pivotal action, and to hold the boat perpendicular to the surf line. Large perforations in the keels permit the water to flow in and out freely. The purpose of this water circulation is not evident, as the keels are large enough so that they might contribute appreciably to buoyancy if made water tight. However, additional buoyancy at this point may be undesirable, as too much flotation forward would tend to neutralize the grip of the keel. This may be the reason for its design.

There are no forward ballast tanks to aid in holding the bow down firmly in position on the beach, so the false keels must perform that function unaided. The addition of ballast tanks would alter the present hull design considerably. They would occupy the space under the deck forward, which is now the space giving the "lift" to the bows and space for the false keels. To the layman it appears that it is possible to have only one of these features, or a greatly modified combination of the two which might have the advantages of neither. One thing is certain: while they may be excellent for sand beaches, jamming the bow of a ship with false keels on a coral reef would do some damage. Double

false keels are also used on small landing craft, and for this purpose they may be the solution to many difficulties.

The tank deck rises as it approaches the bow and then descends sharply to the bow opening, which is 12 feet wide by 15 feet high. A long ramp is hinged at the bottom of this opening and is raised to form the only closure, there being no leaf-type doors to form a cutwater at the bow. This ramp door extends eight or ten feet above the main deck when in the raised position. The long ramp has the advantage of extending far up the beach, making possible a dry landing for the vehicles aboard. A definite disadvantage to the ramp as built is the large, flat area presented to the wind. It undoubtedly slows down the ship appreciably and makes it more difficult to handle, as the ramp is as large as the sail on a good sized boat. Since the bow is barely awash, the sea action on the flat surface may be negligible in smooth water but must cause considerable difficulty in rough weather. The addition of bow doors would cut down wind and water resistance, but the added weight would present a problem which would be hard to solve without making radical changes in basic design.

Above the main deck there is a large barred opening in the ramp near the top. This opening is closed by a two-leaf steel door with a peep-hole in the middle. The purpose of this opening is not evident.

There is a single anchor forward, on the starboard side, and its steam driven winch engine is also used to raise the ramp and to handle the large hatch which gives access from the main deck to the tank deck.

The stern design is also interesting. The anchor

is drawn up into the large slot in the stern, giving easy access for shackling on the cable, and it acts as an ample guide for the stern line when on the beach. The slot reduces the deck space at the fantail to some extent, but it appears to have more advantages than disadvantages. Depth charges are mounted just forward of the stern, which seems a little unusual considering the slow speed of this ship, which probably is from 10 to 12 knots.

The trim lines are evident in the drawing and are undoubtedly responsible for the fact that these ships can be propelled by the small steam engines with which they are equipped. There is very little auxiliary equipment, and the winch engines are all steam operated. They represent the maximum in simplicity and economy of materials used in construction.

The surprising fact is their small capacity. Less than half the length is available for pay load. The tank deck and clear space on the main deck end

at the forward bulkhead of the bridge deckhouse. All the space aft of that is required for the small boiler, engine room, bunker space and crew's quarters. The clear space on both decks is a maximum of 13 by 122 feet which, except for unusually narrow vehicles, would accommodate only one row of not more than five vehicles, a total of ten for the ship with both tank and main decks loaded.

While the underwater hull design is so simple and well streamlined as to approach the beautiful, the ship in its present size does not recommend itself as being adapted to our purposes. It undoubtedly is seaworthy and economical, as a unit, to operate, but its pay load is so small that it would be an expensive means of handling the huge amounts of equipment now used in amphibious operations. We can learn many things from our defeated enemy about the design of small craft and handling them on the beach, but we do not need to apologize for our own efforts in that direction.

Measuring the Atom Bomb's Fire Power

VETERAN Marine artillerymen, well grounded in the art of destruction, can only shake their heads in wonder over the obliterative power of the new atomic bomb. These men, who blasted the holed-up Japanese from their island fortresses half-way across the Pacific, now see their modern weapons become antiquated.

Fourth Marine Division artillery officers, who dumped what was then a record load of explosives on the enemy at Iwo Jima, heard about the epochal one-bomb raid on Hiroshima, busied themselves with pencil and paper and came up with figures which made their mightiest effort seem puny.

Maj William McReynolds figures that the total destructive power of all field artillery projectiles fired by all units on Iwo Jima over a period of 24 days would approximate only one-seventh of the force of the single Hiroshima bomb.

"And, of course," he says, "that's no real comparison. A man underground is comparatively safe from anything except a direct hit from artillery fire. He's not where the atomic bomb is concerned. A shell from a 105mm howitzer can hit within a few feet of a man in a foxhole and do him no harm. You can

only imagine what the atomic bomb would do to him."

The Fourth Division's gunners fired more than 150,000 rounds of ammunition on Iwo. The weight of TNT—the bursting charge—in this amount of artillery fire would be slightly more than 1000 tons. The atomic bomb which struck Hiroshima had the destructive force, it is estimated, of 20,000 tons of TNT.

Maj McReynolds estimates that the division fired one-third of all the ammunition expended by field pieces during the struggle. This means that slightly more than 3000 tons of steel-encased TNT were flung at the enemy in less than a month—a minute amount in comparison with the one bomb.

The new weapon is credited with destroying more than four square miles of the Japanese city. The same result, the major estimates, could be approached by the firing of 2,400,000 rounds by standard artillery pieces. For instance:

"One 105mm gun firing at the rate of three shells per minute, without let-up, day in and day out (an impossible job), could pour out the equivalent theoretical force in 13,333 hours, or 555 days, or slightly more than a year and a half."—Sgt. ALLEN R. MATTHEWS, Combat Correspondent.

The G-4 Is Not a QM

The logistics officer has no more business filling requisitions than an aviator has leading a platoon. He plans and supervises. The quartermaster physically controls property.

By LtCol George F. Gober

EVERY marine officer is familiar with the duties of the quartermaster, but ask the average officer the difference between a logistics officer and a quartermaster and the answer will probably be, "Is there a difference?"

The relationship of the logistics officer (G-4) to the quartermaster may be compared to the relationship between an architect and a carpenter. The architect designs and superintends, whereas the carpenter does the building; the G-4 prepares policies for and supervises supply, evacuation, transportation, and other administrative matters related thereto, whereas the QM procures, stores, accounts for and distributes property and funds.

The logistics officer is on the executive staff, whereas the quartermaster is on the special staff. Yet, the logistics officer must constantly remind fellow officers he is not a quartermaster. Upon receiving a requisition for soap, he may forward it to the QM without comment. But repetition becomes monotonous—and eventually the G-4 may lose his patience and return such a requisition endorsed to the effect that requisitions within prescribed allowances should be submitted to the QM. The originator will probably remark, "Passing the buck." But the logistics officer is not passing the buck. He is following correct procedure for he has no more business handling routine requisitions than an aviator has leading a rifle platoon. His time should not be wasted in detailed QM functions.

Let's move in a little closer to the G-4 and QM by analyzing their separate functions and relationships.

Logistics "comprises everything relating to the movement, supply, and evacuation of troops." Much of G-4's time is occupied with the future. He determines how the marine will get to the scene of the battle, the tools with which he will fight, the supplies necessary to sustain him, and how the marine will leave the given area.

THE logistics officer acts as an agent of, and advisor to, the commanding officer. It is his responsibility to advise the commander concerning the logistic support that can be given to any proposed strategical or tactical line of action, and to make recommendations on necessary decisions concerning supply and evacuation. He makes an estimate of the supply and evacuation situation, formulates the logistic plan, prepares and authenticates administrative orders with annexes, and supervises their execution.

The logistics officer is concerned with the plan-

ning and supervising of many activities that are of little interest to the quartermaster. The quartermaster is concerned with the details of some of the voluminous problems confronting the logistics officer. This may be demonstrated by listing the specific duties of each.

G-4's specific duties may include the planning for and supervision of procurement, storage, distribution, transportation, construction, maintenance, traffic control, evacuation, shore parties, salvage, property responsibility, funds, real estate, preparation of administrative orders, protection of communication lines, rear echelon location, and new equipment.

To examine the quartermaster's duties it is necessary to consider only part of G-4's activities and responsibilities. The QM advises the commander and the logistics officer, and actually performs the following functions: procures, stores, accounts for and distributes equipment and supplies; procures, leases and disposes of real estate; procures and operates quartermaster utilities and repair facilities; operates salvage and graves-registration services; pays for supplies, damages and claims; and has custody and is responsible for disbursement of Government funds.

IT may be noted that G-4 is responsible for the planning and supervision of construction, traffic control, evacuation, shore parties, etc., not listed as QM responsibilities. There are other special staff officers, such as the engineer officer, provost marshal, surgeon, shore-party officer, transport quartermaster, etc., to execute these missions.

Therefore, it may be seen that the G-4 is responsible for a larger field of activities than the QM, but the G-4 only plans and supervises, whereas the QM physically controls property and funds. The various classifications of duties under the logistics section are allocated to various special staff officers for execution.

Along with other special staff sections performing logistical work, the QM is subject to G-4's supervision. He has exactly the same relationship to G-4 as do the transport quartermaster, ordnance officer and motor transport officer. Consequently, it is as logical to call G-4 an ordnance officer as it is to call him a quartermaster.

THE culminating point regarding the logistics officer is that while he plans, supervises and coordinates, he does not have physical control of any property. The only requisitions he handles

are those for controlled items or excessive allowances. His relationship in such a case is merely for approval or disapproval. The QM gets the requisitions for action after they are endorsed by G-4.

When a marine division is being re-equipped the QM prepares the requisitions, and stores and distributes the equipment to regiments and separate battalions. However, the G-4 establishes the priority in which the units are re-equipped.

G-4 maintains his office at the CP, working more directly with the commander than does the QM. Therefore, G-4 informs the QM, as well as other special staff officers performing logistical work, of the commander's policies, and he supervises them to insure execution. He prepares, authenticates and distributes administrative orders with annexes,

whereas the quartermaster executes the orders pertaining to his duties.

In summary, what is the answer to the problem of differentiating between a logistics officer and a quartermaster? The question may be answered briefly by saying that the logistics officer is an executive staff officer charged with the planning and supervision of logistics, while the quartermaster is a special staff officer who has physical control of property and funds.

In units smaller than a regiment, an officer acts both as logistics officer and quartermaster, performing all duties assigned to both. But he should bear in mind the differences and extent of the separate duties and functions.

We do not speak of G-1 as a paymaster; so why call G-4 a quartermaster?

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Marine Artillery Aboard Ship

By Maj Maurice E. Roach

NORMALLY when we speak of artillery weapons, we mean such large caliber guns as the 75mm, 105mm, or 155mm. Due to comparative size, the guns aboard our battleships, cruisers and carriers are looked upon in a somewhat different light, for mounted on these ships are some of the largest guns in the world.

The 40mm and 20mm anti-aircraft guns are mounted on practically all combatant ships and are normally referred to as light artillery weapons by land troops. However, to men of the Navy and sea-going marines, they are merely machine guns. In order to fully appreciate these machine guns, a quick glance into history carved out by marines in the days of wooden vessels is necessary.

In contrast with modern surface engagements, fought with radar-controlled guns at ranges up to 30,000 yards, a naval battle in the days of the mast and sail usually reached its zenith when gunwales of the opposing ships were side by side and their crews engaged in hand-to-hand fighting. Marines first saw duty aboard "ships of the line" and "sloops," forerunners of the present-day battleships and cruisers, as small groups of infantry with the mission of repulsing enemy crews that tried to board their ships. The best rifle marksmen were stationed in the rigging and topmast to snipe at the enemy's key personnel about the deck. These riflemen were the forerunners of today's anti-aircraft machine gunners and secondary battery gun crews, whose battle stations are still in the ship's super-structure, high above the water line.

Prior to the outbreak of World War II, marines on board combatant ships normally manned the five-inch dual purpose guns of the secondary battery. However, the Navy, quick to utilize the marines' ability as small arms experts, has almost without exception assigned them to the anti-aircraft machine guns. Thus marine artillery afloat today consists primarily of the 40mm and 20mm anti-aircraft machine guns. There is no standard policy in the Navy as to the exact number of these guns that marines will man on each type ship. On board the new battleships, marines usually man a couple of the 40mm quads, with about 15 men to a quad, and 10 or 12 20mm single guns, with three men to a gun. Each quad and gun crew includes specially designated ammunition handlers who keep a steady stream of ammunition flowing to the loaders once the shooting starts. This setup may vary slightly with each battleship. On board the cruisers and carriers it has generally been the Navy's policy to

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assign marines only to the 20mm singles, but in some cases this, too, may vary.

Even though these 40s and 20s are the marines' primary shipboard fighting weapons, they also are trained to operate the guns of the secondary battery, and are prepared to man them in cases of emergency. Only a very few ships in the Navy today have marines regularly assigned to the five-inch guns of the secondary battery.

The majority of Japanese planes shot down in the Pacific theater by ships' gunfire during the last months of the war were shot down with 40mm and 20mm machine guns. The marines have taken their toll of enemy aircraft, and numerous miniature Jap flags bedeck the gunshields throughout their batteries. With Japanese aviators resorting to suicide dives into our ships, the machine guns played a greater role than ever in the protection of our naval vessels and destruction of enemy aircraft.

The marine anti-aircraft machine gunner aboard ship is just as much a specialist in sudden death as the marine who storms the beach. The seagoing marine is actually more of a specialist than the line marine in a division, because his primary duty is that of manning a 40mm or 20mm machine gun. Being a specialist, he must possess special qualities and abilities, and the four most important in order of priority are:

(1) *Steady nerves and cool head*: Literally speaking, the machine gunner must possess nerves of steel. He must stand by his gun and continue to pump 'em out even though he is being strafed by an enemy plane. He must not flinch and seek cover, as is the normal reaction. Such action would render his fire useless.

(2) *Ability to aim*: The marines' basic training in how to aim and fire the rifle is, in my opinion, the primary factor behind the splendid box scores they chalked up daily in combat. The principles of aiming mastered in boot camp, in previous wars, and especially in the Pacific war, won them the admiration of every service and the title of "the world's fightingest outfit." In firing the 40mm and 20mm machine guns, the predominant factor is smooth tracking.

(3) *Knowledge of weapon*: A thorough knowledge of the characteristics and functions of the weapon being used is mandatory. Jams, misfires and hangfires are common operational casualties in machine gun batteries, and are likely to occur just at the time the ship is under attack. Casualties of this nature must be remedied with speed and precision, for a gun that cannot fire is useless. A machine gunner must keep his gun in such a state of readiness that it can be fired on an instant's notice.

(4) *Recognition of aircraft*: Training in the identification of aircraft is a never ending process with marines afloat. New aircraft types are constantly being tried in combat, and the machine gunners must be kept abreast of these changes. Many enemy planes are very similar to ours in general appear-

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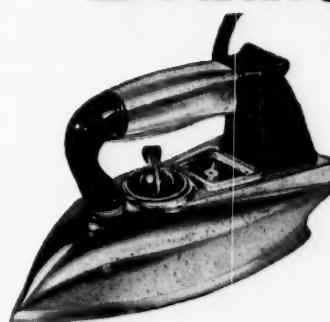
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ance, and the machine gunner must be trained to distinguish friend from foe at a glance.

Thus we have the seagoing marines with their floating artillery, the 40mm and 20mm machine guns, nemesis of the Jap suicider. True, they are weapons not normally referred to as artillery weapons, and when compared with main battery and secondary battery 16-inch, 8-inch, 6-inch and 5-inch guns, they appear all the less impressive. However, like the marines who man them, they do not appear impressive until the chips are down. Then their performance makes them the envy of all.

Age and High Command

In a study of age among high command ranks of the Marine Corps the Statistical Section of the Metropolitan Life Insurance Company reports:

"The Marine Corps, in common with our other military services, has grown enormously during the war period—from a personnel of less than 20,000 in September 1939, to about half a million currently. The gigantic task of organizing, equipping, training and putting into combat large numbers of men has required a considerably expanded leadership. Just before our vast expansion program was launched, there were 16 generals on active duty in the Marine Corps—four major generals including the Commandant, and twelve brigadier generals. On 1 May 1945, there were 76 generals on active duty: the Commandant, who is a full ranking general; a lieutenant general, 29 major and 45 brigadier generals.

"The age distribution of these high officers is shown in the table below. About one-third of the total are under 50 years of age, and an additional two-fifths are in their early 50s. The Commandant, General Alexander A. Vandegrift, is 58 years of age; Lieutenant General Holland M. Smith is 63.

"The average age of the top leadership in the Marine Corps has been reduced considerably during the war period. As of 1 May 1940, the average for major generals was 60.5 years, 6.2 above the current figure quoted above; for brigadier generals, the average age has been lowered by 6.4 years. This decrease in age for the high command of the Marine Corps has been even more marked than for the Navy.

Age Distribution of Generals, by Rank, of the United States Marine Corps on Active Duty, 1 May 1945

Age	Total No. in	Group	each age	Gens	LtGens	MajGens	BrigGens
45 to 49	24		—	6	18		
50 to 54	31		—	12	19		
55 to 59	11		1	4	6		
60 to 64	10		—	1	7	2	
Total number in each rank	76		1	1	29	45	
Average age in years	52.5		58	63	54.3	51.0	

Source—Data supplied by the Division of Public Information, U. S. Marine Corps.

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The Last Landing

THE Fourth Marine Regiment, now participating in the occupation of Japan, is completing a job it began in the Philippines on 7 December 1941.

With the men of the Fourth as they stepped ashore on the Japanese homeland went memories of Bataan, Corregidor, Makin Island, Guadalcanal, Tulagi, New Georgia, Bougainville, Guam and Okinawa—for all these battlefields form the history of this famous marine regiment.

The present Fourth Marine Regiment was reactivated on 1 February 1944 when four marine raider battalions, each famed in its own right, took over the name of the gallant Fourth Regiment which fell when the Japanese overwhelmed the American forces at Corregidor in the early days of the Pacific war.

With their arrival in Japan, the Fourth Regiment has returned to the Orient a unit name well-known there since 1927. For 14 years the men of the Fourth were among the storied "China" marines, protecting United States' nationals and property. Time and again their presence kept the Japanese from making an overt move.

Just nine days before the Japs struck at Pearl Harbor, the bulk of the Fourth Regiment sailed from China—en route to the Philippines. They arrived in time to fight the Japanese. Then came the hopeless, bitter action on Bataan, the order to withdraw from Corregidor, and finally, the surrender to a force of overwhelming numbers.

Even while the old Fourth fought the Japanese, the men who eventually were to become the new Fourth were training for combat. The first of the marine raider battalions were formed in January 1942—the First Raider Battalion at Quantico, the Second at Camp Elliott.

LtCol E. F. Carlson and his Second Raider Battalion landed from submarines at Makin Island on 17 August 1942 to surprise and wipe out the enemy garrison. A week earlier, at Tulagi, LtCol M. A. Edson's First Raiders had stormed enemy positions as other marines hit the beaches on Guadalcanal. Both the

First and Second Raiders saw plenty of action on Guadalcanal, saving Henderson Field with a historic stand at Lunga Ridge—Bloody Ridge—and roving through the jungle, isolated from other marine units, killing off Japs in daring raids.

While the First and Second Raiders rested after the Guadalcanal campaign, the Third Raider Battalion was forming in Samoa under Col Harry B. Liversedge. A fourth battalion was organized in the States by LtCol James Roosevelt.

Marine raiders drew important roles in the invasions of New Georgia and Bougainville. After the Bougainville fight, as Allied strategy shifted from separate battalion-sized units to massed attacking forces, Col Alan Shapley organized all four of the raider battalions into a regular regiment. Thus was reborn the Fourth Regiment.

The new Fourth's first landing was a quiet one. Landing on Emirau in the St. Matthias Islands, they found the Japanese had deserted it. On 21 July 1944, the Fourth Regiment landed on the southwest coast of Guam as part of a marine-army force which recaptured the island in a crushing 18-day campaign.

At Okinawa, the Fourth went into action as a unit of the newly-formed Sixth Division. They raced inland past deserted beaches to seize Yontan airfield, advanced rapidly northward to help secure the upper end of Okinawa far ahead of schedule and then joined in the bitter fighting on the Naha-Shuri line to the south. In a quick amphibious landing behind the Japs at Naha, they led the way to a juncture with the First Division.

The Fourth Regiment, which had seen the war's first shots in the Orient, was back in the Orient again, firing what were to be among the last shots preceding the Japanese surrender.

When that surrender came, the Fourth Regiment was selected to spearhead the occupation of the Japanese homeland. The men of the old Fourth and the men of the new Fourth who did not live long enough to take part in the occupation would be happy to know that.